IBM Business Process Manager
Version 8 Release 0

IBM Business Process Manager Standard Installation Guide

IBM

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Contents

Chapter 1. Roadmap: Installing and configuring IBM Business Process Manager Standard

The IBM® Business Process Manager Standard installation and configuration programs accommodate various development and production scenarios. This roadmap guides you through the most common paths for installing and configuring IBM Business Process Manager Standard in a stand-alone or network deployment environment.

Alternatively, you can use the Interactive Installation and Configuration Guide to answer a series of questions about your target environment. The guide generates a set of installation and configuration topics that are customized to your installation needs.

The roadmap provides the most relevant links for each common installation and configuration scenario, grouped by operating system.

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- "Linux"
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- "Windows" on page 3

Linux

To install IBM Business Process Manager on Linux, follow this roadmap.

Preparing
> Complete all the following tasks: review the hardware and software requirements, prepare the operating system for installation, and ensure that you have installed the database management system.
> - "System requirements" on page 83
> - "Preparing Linux systems for installation" on page 85
> - Chapter 3, "Databases and installation and configuration scenarios," on page 7

Deciding
> Before proceeding with the installation, determine which type of installation you want to perform, typical or custom, and choose the appropriate deployment environment for your installation, stand-alone or network deployment.
> - Choosing the type of installation
> - Choosing a stand-alone or network deployment environment

Installing
> Based on the decisions made earlier, select the installation option that is most appropriate for your deployment environment, and then complete the steps to install the product.
> - "Typical installation and configuration" on page 92
> - "Custom installation and configuration" on page 112
>   - "Installing IBM Business Process Manager Standard interactively" on page 113
>   - "Installing IBM Business Process Manager silently" on page 117

Configuring
> No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.

1

Stand-alone deployment
"Configuring profiles and databases" on page 124

Network deployment
Based on your configuration, choose the database that you want to work with, and follow the steps to configure the profiles and build the network deployment configuration.
- "Configuring profiles and creating a network deployment environment" on page 315
- Creating a network deployment environment

AIX

To install IBM Business Process Manager on AIX, follow this roadmap.

Preparing
Complete all the following tasks: review the hardware and software requirements, prepare the operating system for installation, and ensure that you have installed the database management system.
- "System requirements" on page 83
- "Preparing AIX systems for installation" on page 84
- Chapter 3, "Databases and installation and configuration scenarios," on page 7

Deciding
Before proceeding with the installation, determine which type of installation you want to perform, typical or custom, and choose the appropriate deployment environment for your installation, stand-alone or network deployment.
- Choosing the type of installation
- Choosing a stand-alone or network deployment environment

Installing
Based on the decisions made earlier, select the installation option that is most appropriate for your deployment environment, and then complete the steps to install the product.
- "Typical installation and configuration" on page 438
- "Custom installation and configuration" on page 455
    - "Installing IBM Business Process Manager Standard interactively" on page 455
    - "Installing IBM Business Process Manager silently" on page 457

Configuring
No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.

Stand-alone deployment
"Configuring profiles and databases" on page 463

Network deployment
Based on your configuration, choose the database that you want to work with, and follow the steps to configure the profiles and build the network deployment configuration.
- "Configuring profiles and creating a network deployment environment" on page 652
- Creating a network deployment environment

Solaris

To install IBM Business Process Manager on Solaris, follow this roadmap.

Preparing
Complete all the following tasks: review the hardware and software requirements, prepare the operating system for installation, and ensure that you have installed the database management system.

- "System requirements" on page 83
- "Preparing Solaris systems for installation" on page 87
- Chapter 3, "Databases and installation and configuration scenarios," on page 7

Deciding

Before proceeding with the installation, determine which type of installation you want to perform, typical or custom, and choose the appropriate deployment environment for your installation, stand-alone or network deployment.
- Choosing the type of installation
- Choosing a stand-alone or network deployment environment

Installing

Based on the decisions made earlier, select the installation option that is most appropriate for your deployment environment, and then complete the steps to install the product.
- "Typical installation and configuration" on page 770
- "Custom installation and configuration" on page 787
  - "Installing IBM Business Process Manager Standard interactively" on page 787
  - "Installing IBM Business Process Manager silently" on page 789

Configuring

No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.

Stand-alone deployment

"Configuring profiles and databases" on page 795

Network deployment

Based on your configuration, choose the database that you want to work with, and follow the steps to configure the profiles and build the network deployment configuration.
- "Configuring profiles and creating a network deployment environment" on page 988
- Creating a network deployment environment

Windows

To install IBM Business Process Manager on Microsoft Windows, follow this roadmap.

Preparing

Complete all the following tasks: review the hardware and software requirements, prepare the operating system for installation, and ensure that you have installed the database management system.
- "System requirements" on page 83
- "Preparing Windows systems for installation" on page 87
- Chapter 3, "Databases and installation and configuration scenarios," on page 7

Deciding

No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.

Installing

Based on the decisions made earlier, select the installation option that is most appropriate for your deployment environment, and then complete the steps to install the product.
- "Typical installation and configuration" on page 1110
- "Custom installation and configuration" on page 1132
  - "Installing IBM Business Process Manager Standard interactively" on page 1132
  - "Installing IBM Business Process Manager silently" on page 1137

Configuring

No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.

Stand-alone deployment

"Configuring profiles and databases" on page 1143

Network deployment

Based on your configuration, choose the database that you want to work with, and follow the steps to configure the profiles and build the network deployment configuration.

- "Configuring profiles and creating a network deployment environment" on page 1342
- Creating a network deployment environment

Chapter 2. Installation types and profiles

There is a relationship between the type of installation you perform, **Typical** or **Custom** and how profiles associated with the installation type are created for each IBM BPM configuration (Express, Standard and Advanced).

The following tables describe the relationships.
- "IBM BPM Advanced"
- "IBM BPM Advanced: Process Server"
- "IBM BPM Standard" on page 6
- "IBM BPM Express" on page 6

IBM BPM Advanced

Table 1. Profile configuration as part of installation: IBM Business Process Manager Advanced

Type of installation	Media	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Electronic image only	Yes	No	Yes	Not Applicable
Custom	DVD or electronic image	No	Yes	No	Yes

IBM BPM Advanced: Process Server

Table 2. Profile configuration as part of installation: IBM Business Process Manager Advanced: Process Server

Type of installation	Media	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Electronic image only	*Process Server only*	No	Yes	Not Applicable
Custom	DVD or electronic image	Optionally A feature allows you to create Process Server and or WebSphere ESB profiles for Unit Test Environment (UTE) only	Yes	No	Yes

IBM BPM Standard

Table 3. Profile configuration as part of installation: IBM Business Process Manager Standard

Type of installation	Media	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Electronic image only	Yes	No	Yes	Not Applicable
Custom	DVD or electronic image	No	Yes	No	No

IBM BPM Express

Table 4. Profile configuration as part of installation: IBM Business Process Manager Express

Type of installation	Media	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	Electronic image only	Yes	No	Yes	Not Applicable
Custom	DVD or electronic image	No	Yes	No	No

Chapter 3. Databases and installation and configuration scenarios

How databases are configured to work with the software is related to the software you are installing and the scenario you are trying to achieve.

In installation scenarios where you will be using the **Typical** installation option, you must pre-create your database, whether that database resides locally (on the same system on which you are installing IBM Business Process Manager) or remotely (on a separate system). The only scenario where you are not required to pre-create your database is when you are installing the DB2 Express database that is embedded with IBM Business Process Manager. DB2 Express is embedded with IBM Business Process Manager on Windows and on Linux for Intel. The user must have administrative privileges (root or Administrator) to install Express® Express. If you do not already have DB2 Express installed, it is optionally installed when you run the IBM Business Process Manager installer, and the installer also creates the common and component-specific databases on DB2 Express.

Any scenario where you are not using DB2 Express for your **Typical** install is considered to be a **Typical** installation with an *existing database*, meaning you already have a database installed and you will use the *Existing database panel* of the installer to specify its configuration properties. To use this option, you must ensure that your database has already been created.

You and your database administrator should review the information on configuring databases in the information center prior to installing and configuring the software.

Chapter 4. Preparing to install and configure the software

Before preparing to install and configure the software, create a plan for the deployment environment that you want to create.

Use the information listed in the following table to prepare for installing and configuring IBM Business Process Manager.

Table 5. Preparing for installation and configuration

Task	Where to find information	Result after completing the task
Review hardware and software requirements	Depending on your IBM BPM configuration, visit: • IBM Business Process Manager Advanced system requirements • IBM Business Process Manager Standard system requirements • IBM Business Process Manager Express system requirements	You understand the system requirements necessary to support your IBM Business Process Manager installation.
Prepare your operating system	AIX Preparing AIX systems for installation Linux Preparing Linux systems for installation Solaris Preparing Solaris systems for installation Windows Preparing Windows systems for installation	You have prepared the operating system of each workstation to be used.

Table 5. Preparing for installation and configuration (continued)

Task	Where to find information	Result after completing the task
Make sure you have installed your database management system.	Consult your database documentation for information about installing and administering your database management system.	Your database management system is installed. IBM Business Process Manager embeds the DB2 Express database. If you want to use DB2 Express as your database, you can select it as a feature from the installer and it is installed and configured automatically. The user must have administrative privileges (root or Administrator) to install DB2 Express. **Note:** If you already have a version of DB2 installed and you want to install DB2 Express, you must uninstall DB2 before running the IBM Business Process Manager installer. If the installer detects a version of DB2 installed and you have selected to install DB2 Express from the installer, you will receive a warning message and will not be able to install DB2 Express. **Important:** Linux If you are installing DB2 Express as a root user, you must ensure that all kernel requirements are met before the DB2 Express installation begins. See Kernel parameter requirements (Linux) for a list of the kernel requirements. You can locate the current values by parsing the output of the **ipcs -l** command. **Important:** You will not be able to properly install and use DB2 Express if the password that is specified does not meet operating system or company restrictions, because an operating system user is created on install.

Chapter 5. Planning for IBM Business Process Manager

To ensure that the system that you implement meets your needs, plan your IBM Business Process Manager before you introduce its software into your enterprise information system.

Planning your path through the installation documentation

The installation process for IBM Business Process Manager, with its many components and potential configurations, supports various scenarios and topologies, ranging from a basic proof-of concept, demonstration, or test environment, to a mature distributed high-availability production environment. You might need some help with the many installation options.

The topics that you need as you work through your installation process are not together in the navigation tree and, depending on your search query, might not be easy to pick out in the search results.

To address this situation, use the Interactive Installation and Configuration Guide to generate a set of installation and configuration topics that are customized to your precise installation needs. In the Interactive Installation and Configuration Guide form, select the options you need for your installation scenario. As you select each option, the tool automatically removes options that are ruled out by your previous selections. For example, if you indicate that you plan to install the Express configuration, it removes Network Deployment as a potential topology.

After you fill out the form, the tool generates a single topic containing all of the installation and configuration instructions that apply to your scenario. You can save and print these instructions so that they are sharable and portable. You can also go back, change your selections, and generate a new set of instructions. Each time you need to install product components with other options, return to the form and generate a new guide, or use the tool to see what the installation and configuration process looks like when you choose different options.

This following topics describe some of the options presented in the Interactive Installation and Configuration Guide form, the factors you should consider as you plan your installation process, and what causes some options to be greyed-out by the tool. The **Help me decide** links in the form bring you to these topics, to help you understand the decisions you make and their impact on the resulting generated instructions.

Note: The Interactive Installation and Configuration Guide and these topics are not intended to cover installation planning for z/OS®. Use the help navigation to find the online help topics on planning and installing IBM BPM for z/OS

Deciding which configuration to install

IBM BPM is available in four configurations: Advanced, Advanced: Process Server, Standard, and Express, each targeting various enterprise needs. To select which configuration to install, consider your enterprise's needs in terms of the level of business process management adoption and the product features and topology support that you want.

Table 6. Deciding which IBM Business Process Manager configuration to install

How far along the path to adopting full business process management capabilities is your enterprise?	What specific capabilities and availability support do you require?	Install this configuration:
Project-level adoption: You are starting your first business process management project and are looking primarily for rapid time-to-value and improving user productivity.	• Execution compatible with WebSphere Lombardi Edition • IBM Process Designer authoring tool • Collaborative editing and immediate playback • Interactive user interfaces • ILOG-based process rules • Real-time monitoring and reporting • Performance analytics and optimizer • Performance Data Warehouse • IBM Process Center, with a shared asset repository • Up to three process authors and 200 users • Two cores for developers, four cores for the product, but no clustering • Windows and Linux on Intel support	IBM Business Process Manager Express
Multiple projects: Your enterprise is involved in multiple business process management projects and requires basic integration support.	All the capabilities of IBM BPM Express, plus the following capabilities and support: • Unlimited authors and end users • Clustering support for high availability • Linux on System z, AIX, and Solaris support • Network deployment support • DB2® for z/OS support	IBM Business Process Manager Standard
Transformative: Your enterprise requires high-volume process automation and needs additional SOA components for extensive service integration and orchestration.	All the capabilities and high-availability support of IBM BPM Standard, plus the following capabilities and support: • Execution compatible with WebSphere® Process Server • IBM Integration Designer authoring (BPEL and SOA) • Built-in enterprise service bus (ESB) • Transaction support • Integration adapters • Business Space user interface	IBM Business Process Manager Advanced
Your enterprise currently uses an earlier version of Process Server alone and you want to update to the latest release.	All the Process Server-related capabilities and high-availability support of IBM BPM Advanced. Does not include Process Designer or Process Center.	IBM Business Process Manager Advanced: Process Server

Related information:

↪ Detailed hardware and software requirements for IBM Business Process Manager Express

↪ Detailed hardware and software requirements for IBM Business Process Manager Standard

↪ Detailed hardware and software requirements for IBM Business Process Manager Advanced

Choosing an operating system

You probably know which supported operating system you plan to install the server components on. Your options might be limited by the product configuration you are installing and your project preferences and available infrastructure. Furthermore, your operating system selection somewhat constrains the options that are available for other choices you make during the installation process.

If you are planning to install IBM BPM Express, you can install the server components on Windows or Linux on Intel systems, or, if you are an IBM Master Data Management customer, AIX. For IBM BPM Standard and IBM BPM Advanced, Windows, Linux on Intel and on System z, AIX and Solaris are supported.

Depending on your choice of operating system, the Interactive Installation and Configuration Guide automatically constrains the options that are available for supported databases, based on probable scenarios. You can choose from the remaining options to generate a custom set of instructions that you can follow when you install and configure the product.

If you choose to install server components on Linux on System z, AIX, or Solaris, the generated installation guide includes the instructions for configuring IBM BPM to use an existing database server. If you choose Windows or Linux on Intel, you can choose to use an existing database server, or to have the installation process install and configure DB2 Express, which is useful for proof-of-concept or simple environment installations.

Nonadministrative, nonroot access considerations

If you are a nonadministrative or nonroot user, there are restrictions concerning Installation Manager and DB2.

If you install Installation Manager or WebSphere Application Server as a nonadministrative or nonroot user, that installation is available to only that user and not other users on the system. See the WebSphere Application Server information center for additional limitations for nonadministrative users.

If you indicate in the form that you are a nonadministrative or nonroot user, the generated instructions include information specific to you. See the following link before deciding whether to install as a nonadministrative or nonroot user.

Related concepts:

"Non-administrative user considerations" on page 57
Remember the database details so that you can enter them during the installation.

Choosing an installation topology

You can choose to install IBM BPM components all on one computer, which is usually sufficient for small projects, trials, or proof-of-concept installations, or distributed across multiple computers, which is suitable for larger projects and enterprise systems.

You can install a stand-alone topology with any of the product configurations. If you want to install a network deployment topology, you must be installing IBM BPM Standard or IBM BPM Advanced; only stand-alone is available for IBM BPM Express.

If you indicate on the Interactive Installation and Configuration Guide form that you want to install a stand-alone topology, the form greys out options for configuring a network deployment topology, such as using the `configureNode` command or the Deployment Environment wizard, and the generated instructions do not include information about configuring a network deployment environment topology.

If you indicate on the form that you want to install a network deployment topology, you cannot select a typical installation type; installing a distributed topology requires that you choose one of the custom installation types.

Related concepts:

"Choosing a stand-alone or network deployment environment" on page 28
Choose a stand-alone environment to evaluate the product or to support development of applications and services. Choose a network deployment environment when your production environment needs additional features such as capacity, availability, scalability, and failover support.

"Overview: Deployment environment topologies and patterns" on page 32
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topologies of a network deployment environment" on page 37
A topology is the physical layout of the deployment environment. You can create the topology that best addresses your business needs by choosing one of the patterns provided by IBM or by creating your own customized pattern.

"Considerations for selecting a topology" on page 46
Selecting an appropriate topology for your deployment environment depends upon several factors.

"Topology patterns and supported product features" on page 48
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

"Determining whether to create a standardized or customized network deployment environment" on page 50
There are two approaches to configuring your network deployment environment after profile creation. You can create a standardized network deployment environment based on IBM-supplied topology patterns, or you can create a customized network deployment environment to meet your unique business processing needs.

Related tasks:

"Planning your network deployment environment" on page 31
Setting up a network deployment environment involves many decisions, such as the number of physical workstations and the type of pattern you choose. Each decision affects how you set up your deployment environment.

Deciding whether to install into an existing WebSphere Application Server instance

You probably know whether you have a WebSphere Application Server instance, possibly with existing profiles that you want to augment, or whether you want to install a new instance.

If you are installing a new test environment or doing a proof-of-concept project, you can install an instance of WebSphere Application Server as part of the larger installation process. However, if you already have a supported version of WebSphere Application Server installed, you can reuse it, and either create new profiles or augment existing profiles, thereby somewhat shortening and simplifying the installation and configuration process. Also, IBM BPM supports only augmentation of deployment manager and stand-alone profiles, or managed node profiles that have not yet been federated to a deployment manager.

If you choose to install into an existing WebSphere Application Server instance, the Interactive Installation and Configuration Guide restricts your options to generating information about the custom installation process in a graphical interface. The options to perform a typical installation or a silent installation with

command line or response file are greyed out because IBM BPM does not document these options for WebSphere Application Server installation. Consequently, if you want to generate a custom installation guide for a typical or silent installation, you must choose to install a new WebSphere Application Server instance.

Choosing the type of installation

The installation type selection determines how you interact with the installation process to provide information and select the options you want.

If you want to install into an existing WebSphere Application Server instance, your only available option is to perform a custom installation through the graphical interface. Generated instructions for performing typical and silent WebSphere Application Server installations are not available in the Interactive Installation and Configuration Guide. If you want to perform a typical installation or a silent installation, you must install and configure a new WebSphere Application Server instance.

A typical installation is the simplest and quickest method for installing and configuring. The installation program uses default values for as many installation options as possible, and you supply values for the remaining options using a graphical interface. This is suitable for a relatively quick proof-of-concept or stand-alone installation and when you are not using an existing WebSphere Application Server instance. The typical installation installs the software and configures a stand-alone profile for you. You do not need to create a profile later using the Profile Management Tool or `manageprofiles` command.

Windows The typical installation also installs Process Designer on your machine.

With a custom installation using a graphical interface, you can customize all installation settings.

With a custom installation using a command line, you can run a command that specifies installation settings. This is more suitable if you only require a single installation.

With a custom installation using a response file, you create a file that specifies installation settings, and run an installation command that calls it. Using a response file is a better choice if you know that you need similar installations on several systems in your enterprise.

For all of the custom options, the generated guide includes information about creating profiles after installation.

Related concepts:

Chapter 2, "Installation types and profiles," on page 5
There is a relationship between the type of installation you perform, **Typical** or **Custom** and how profiles associated with the installation type are created for each IBM BPM configuration (Express, Standard and Advanced).

Deciding what types of profiles to configure

The installation process installs the Process Center and Process Server server components. Process Center provides a repository for process assets, a runtime environment for testing and studying the performance of processes, and a console for administering access to assets and deploying processes to test, stage, or production environments. Process Server is a runtime environment for process applications and a data warehouse for collecting performance data from the applications. It includes administrator consoles for managing and maintaining the runtime environments and data warehouses. To use these server components, you must configure server profiles for them.

You can configure server profiles for either one or both of these, depending on your needs. If you configure one, you can return to these instructions later and configure the other.

If you are installing IBM BPM Advanced: Process Server, the Process Center option is not available.

Configuring profiles for both Process Server and Process Center is two separate activities: you first configure a profile for one, and then another profile for the other. If you want to configure profiles for both Process Center and Process Server, you must select a custom installation type. If you are generating an installation guide using the Interactive Installation and Configuration Guide form, and you select **Process Center and Process Server**, the generated instructions include information about sequentially configuring both types of profiles.

If you select the typical installation type, you can select only one type of profile to configure. If you want to configure the other profile type as well, you must perform its configuration steps after the typical installation has completed.

Choosing whether to install DB2 Express

You can choose to have the installation process include automatically installing an instance of IBM DB2 Express. Choose this option if you do not have an existing or planned supported database server you intend to use to store content from Process Center or Process Server. If you are installing a test or proof-of-concept environment, you would likely choose to have a new DB2 Express installed automatically, unless one already exists on the system.

Choices you make for other installation options affect what is available for this choice. If you want the generated instructions to include automatically installing DB2 Express, you must install on Windows or Linux on an Intel system. If you are installing any product configuration onto Linux on System z, AIX or Solaris, the installation process does not offer to install DB2 Express; you must use a database server product that you have already installed or will install.

You cannot install DB2 Express on any system that already has DB2 installed on it. Furthermore, you must install as an administrative or root user to install DB2 Express.

The configuration steps configure Process Center or Process Server to use the database of your choice, regardless of whether you automatically install a new DB2 Express instance or you are using an otherwise-installed supported database server.

Related concepts:

"Databases and your IBM Business Process Manager topology" on page 52
A database configuration is part of the overall IBM Business Process Manager topology. For configuration activities, you must understand the differences between Process Center and Process Server databases as they relate to topology and runtime processing.

Related tasks:

"Planning your database configuration" on page 52
To plan your database configuration, you need to know which databases must be in place and configured in order to use the software, which components of IBM Business Process Manager you will use and their associated databases, the tasks required to administer the databases, and the security privileges of the database system that you are using.

Related information:

"Choosing how and when to configure the common database" on page 53
You can create the required database tables either before or after configuring IBM Business Process Manager. The important thing to remember is that the databases (including their tables, schemas, and so on) must exist before the IBM Business Process Manager servers try to use them.

Choosing whether to use configureNode

The `configureNode` command lets you create and extend profiles and typical network deployment environments in a single command line step, as an alternative to the two-step process of using Profile Management Tool or `manageProfiles` to create profiles and the Deployment Environment wizard, the Administrative console, or `wsadmin` commands to configure the network deployment environment.

The **configureNode** command is not available if:

- you select DB2 for z/OS as your database, or
- you choose to set up a stand-alone environment, for which you do not need to set up a network deployment environment.

If you select **Yes, I want to use the configureNode command**, the generated instructions include information about running **configureNode** commands. If you select **No, I will create profiles and the network deployment environment separately**, the generated instructions include information about using one of the two options for creating profiles, and about using one of the three options available for creating the network deployment environment.

Restriction: The **configureNode** command creates a Deployment Manager using default port numbers. Do not use **configureNode** if you already have another WebSphere Application Server-based product installed on the same machine which runs at the same time as the new environment. The **configureNode** command does not have the option to define ports for the Deployment Manager or the node profile.

Choosing whether to use PMT or manageProfiles to create profiles

When creating or augmenting server profiles for Process Center or Process Server, you can choose between using the graphical interface of the Profile Management Tool or the command line interface of the **manageProfiles** command, which facilitates silent configuration.

If you select **Profile Management Tool (PMT)**, the generated instructions include information about using the graphical interface tool to create or augment profiles. If you select **manageProfiles command (silent)**, the generated instructions include information about using the command line interface for creating and augmenting profiles.

These options are not available if you choose to perform a typical installation, in which case a profile is created automatically, or if you select to use the **configureNode** command to create the profiles.

Restriction: PMT is not available for installations on Solaris with SPARC 64-bit. The Interactive Installation and Configuration Guide does not enforce this restriction, so if you are installing on that Solaris with SPARC 64-bit, select the **manageProfiles** option.

Choosing a method for configuring a network deployment

You have three options for configuring a network deployment environment, if you are not using the **configureNode** command. You can use the Deployment Environment wizard, the Administrative Console, or the **wsadmin** command. They each configure a deployment environment after you have used the Profile Management Tool or the **manageProfiles** command to create server profiles.

If you select **Deployment Environment wizard**, the generated instructions include information about using the graphical interface tool to create the network deployment manager. If you select **Administrative Console**, the generated instructions include information about using the WebSphere Application Server Administrative console to create the deployment environment. If you select **wsadmin commands (silent)**, the generated instructions include information about using command line interface to create the deployment environment, facilitating silent configuration.

These options are not available if you choose to perform a typical installation, in which case a profile is created automatically, or if you are installing a stand-alone environment, in which case you do not need a network deployment environment, or if you choose to use the **configureNode** command to create the profiles.

Assessing your requirements

To minimize rework and outages, take the time to study your current environment before you make installation and configuration decisions. Consider your current business requirements and design, the hardware and software already installed, and your current strengths and shortcomings. This planning could also help you minimize your financial investment.

Several factors determine your software needs. These factors can be organized into the following categories.
- Product hardware and software requirements, your own system resource constraints, and the availability of resources to administer and maintain your system
- Applications to be deployed to the runtime environment, and the intended use of the configured environment
- Products, and the versions of these products, to install to meet your requirements

To make wise choices for all these factors, you must understand the following concepts:
- The terminology as it applies to environment configuration
- The administrative architecture of the product that you will install, configure, administer, and maintain
- The available configuration options (through supplied patterns) and how to determine if a pattern addresses your intended use of the product
- The supported methods of implementation, including an understanding of the different task flows for installing the product and configuring the environment

You can use the information in this section to assess and analyze your current and future requirements to develop an environment to meet those requirements.

Important: For the latest information about platform-specific disk space requirements, supported operating systems, and supported database versions, click one of the following links. You can also find operating system fixes and patches that you must install to have a compliant operating system.
- IBM Business Process Manager Advanced system requirements
- IBM Business Process Manager Standard system requirements
- IBM Business Process Manager Express system requirements
- IBM Business Process Manager Tools and Add-Ons requirements

Process and process application considerations

Your current requirements provide the baseline on which to formulate a plan for streamlining integration of your business components. Your vision for the future of your business can provide a guideline that can help you make decisions as your business grows.

You need to know how your product or service is created and delivered. IBM Business Process Manager comes with deployment environment patterns designed to meet the requirements of both production and test environments.

Consider the following:
- Consider how process applications interact with existing services and back-end systems.
- Consider how process applications handle data and how data flows through your system to address a specific business need.

  Understand how data persists across retrievals, sessions, processes, and other boundaries when you are developing a solution and configuring its environment.

  Consider the following items regarding the process applications to be deployed to your environment:
  - Process application invocation patterns

You must understand how the runtime environment handles asynchronous invocations and how the SCA runtime environment leverages the underlying message system to implement asynchronous invocations.

Different applications have different needs. Those needs are determined by factors such as export types, component types, interactions between components, import types, resources needed such as databases or JMS resources, the need for business events, and their transmission mechanism.

– Types of business processes that you plan to implement (transactional business processes, interruptible business processes, non-interruptible business processes)

Non-interruptible business processes, or microflows, are short-running business processes that run in one transaction or without a transaction. Non-interruptible business processes are fast with little performance overhead. All activities within one are processed in a single thread.

Interruptible business processes, or macroflows, are long-running business processes that contain a set of activities, each of which is performed in its own transaction. Interruptible business processes can include activities that require human intervention or calls to remote systems or both. Asynchronous activities cause a business process to be interruptible because these activities might take minutes, hours, or even days to complete.

Resource considerations

Identify your assets to make the best use of your software and hardware resources and to make informed implementation decisions. Assess your current enterprise information system to determine whether you require any additional hardware or software to meet your business needs.

Consider the following factors:
- Familiarize yourself with current hardware and software. Prepare a list of the available assets.
- Determine the number of physical computer systems that you will use and itemize each piece of physical hardware. Record the following information:
  - Amount of installed memory
  - Number and type of installed microprocessors
  - External media
  - Whether a particular unit can be upgraded
- Ensure all servers involved, both for the product and the databases, use the same network time protocol and are set to the same time.
- Itemize the currently installed software and database applications. Record the following information:
  - Function
  - Breadth of use across the company
  - Security requirements
- Prepare a list of your current IT personnel. Determine whether you have the required expertise to install and maintain IBM Business Process Manager, as well as the required expertise to manage your databases. Make sure that the appropriate users have user IDs with the authorizations to successfully install all products and files.

Development and deployment version levels

When you try to determine the version levels of IBM Business Process Manager that you need in your environment, your decision depends on the version levels that were used when your applications were developed. Generally, applications deployed in a previous version of IBM Business Process Manager can run on the next available version of IBM Business Process Manager.

The following table describes compatibility between IBM Business Process Manager V8.0, including IBM Integration Designer V8.0 (previously WebSphere Integration Developer) and IBM Process Designer V8.0, and prior releases.

Task	Supported?
Deployment from WebSphere Integration Developer version 6.1.0, 6.1.2, or 6.2.0 or 7.0.0 or IBM Integration Designer 7.5 to IBM Business Process Manager V8.0.	Yes. **Important:** For WebSphere Adapters V6.1.0, V6.1.2 and V6.2.0, you must install the interim fix titled *Mandatory adapter fix for running 6.1 and 6.2 Adapters on WPS v7.0*. If you do not plan to update the WebSphere Adapter to a V7.0 level, and you plan to continue to use the application with WebSphere Adapter V6.1.0, V6.1.2 or V6.2.0, you must apply this interim fix on the source environment. **Important:** Websphere Adapter for SAP V6.0.2, V6.1.0, V6.1.2 and V6.2.0 are not supported on IBM Business Process Manager V8.0. You must update Websphere Adapter for SAP to V7.0 before you can deploy any applications that use Websphere Adapter for SAP on IBM Business Process Manager V8.0.
Running IBM Business Process Manager V8.0 artifacts on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0, or 7.0 or IBM Business Process Manager 7.5.	No. Applications authored with IBM Integration Designer V8.0 cannot be published to or installed on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0, or 7.0 or IBM Business Process Manager 7.5 (any prior release) servers. Applications authored with WebSphere Integration Developer 6.1.0, 6.1.2, 6.2.0, or 7.0 or IBM Integration Designer 7.5 and then generated in IBM Integration Designer V8.0 cannot be published to or installed on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0, or 7.0 orIBM Business Process Manager 7.5 servers. Applications generated using `serviceDeploy` from IBM Business Process Manager V8.0 servers cannot be installed on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0, or 7.0 or IBM Business Process Manager 7.5 servers.

Naming considerations for profiles, nodes, servers, hosts, and cells

This topic discusses reserved terms and issues you must consider when naming your profile, node, server, host, and cell (if applicable). This topic applies to distributed platforms.

Profile naming considerations

The profile name can be any unique name with the following restrictions. Do not use any of the following characters when naming your profile:

- Spaces
- Special characters that are not allowed within the name of a directory on your operating system, such as *, &, or ?.
- Slashes (/) or back slashes (\)

Double-byte characters are allowed.

`Windows`   **Directory path considerations:** The installation directory path must be less than or equal to 60 characters. The number of characters in the *profiles_directory_path\profile_name* directory must be less than or equal to 80 characters.

Node, server, host, and cell naming considerations

Reserved names: Avoid using reserved names as field values. The use of reserved names can cause unpredictable results. The following words are reserved:

- cells
- nodes
- servers
- clusters
- applications
- deployments

Descriptions of fields on the Node and Hosts Names and Node, Host, and Cell Names pages: Table 7 describes the fields found on the Node and Host Names and Node, Host, and Cell Names pages of the Profile Management Tool, including the field names, default values, and constraints. Use this information as a guide when you are creating profiles.

Table 7. Naming guidelines for nodes, servers, hosts, and cells

Field name	Default value	Constraints	Description
Stand-alone server profiles			
Node name	**Linux** **UNIX** **Windows** *shortHostName* Node *NodeNumber* where: *shortHost Name* is the short host name. *NodeNumber* is a sequential number starting at 01.	Avoid using the reserved names.	Select any name you want. To help organize your installation, use a unique name if you plan to create more than one server on the system.
Server name	**Linux** **UNIX** **Windows** server1	Use a unique name for the server.	The logical name for the server.
Host name	**Linux** **UNIX** **Windows** The long form of the domain name server (DNS) name.	The host name must be addressable through your network. If you are planning to use Business Space, use a fully qualified host name.	Use the actual DNS name or IP address of your workstation to enable communication with it. See additional information about the host name following this table.

Table 7. Naming guidelines for nodes, servers, hosts, and cells (continued)

Field name	Default value	Constraints	Description
Cell name	**Linux** **UNIX** **Windows** *shortHostName* Node *NodeNumber* Cell where: • *shortHost Name* is the short host name. • *NodeNumber* is a sequential number starting at 01.	Use a unique name for the cell. A cell name must be unique in any circumstance in which the product is running on the same physical workstation or cluster of workstations, such as a Sysplex. Additionally, a cell name must be unique in any circumstance in which network connectivity between entities is required either between the cells or from a client that must communicate with each of the cells. Cell names also must be unique if their name spaces are going to be federated. Otherwise, you might encounter symptoms such as a javax.naming.Name NotFoundException exception, in which case, you need to create uniquely named cells.	All federated nodes become members of a deployment manager cell.
Deployment manager profiles			
Node name	**Linux** **UNIX** **Windows** *shortHostName* Cell Manager*Node Number* where: • *shortHost Name* is the short host name. • *NodeNumber* is a sequential number starting at 01.	Use a unique name for the deployment manager. Avoid using the reserved names.	The name is used for administration within the deployment manager cell.
Host name	**Linux** **UNIX** **Windows** The long form of the domain name server (DNS) name.	The host name must be addressable through your network. Avoid using the reserved names. If you are planning to use Business Space, use a fully qualified host name.	Use the actual DNS name or IP address of your workstation to enable communication with it. See additional information about the host name following this table.

Table 7. Naming guidelines for nodes, servers, hosts, and cells (continued)

Field name	Default value	Constraints	Description
Cell name	Linux UNIX Windows *shortHostName* Cell *CellNumber* where: • *shortHost Name* is the short host name. • *CellNumber* is a sequential number starting at 01.	Use a unique name for the deployment manager cell. A cell name must be unique in any circumstance in which the product is running on the same physical workstation or cluster of workstations, such as a Sysplex. Additionally, a cell name must be unique in any circumstance in which network connectivity between entities is required either between the cells or from a client that must communicate with each of the cells. Cell names also must be unique if their name spaces are going to be federated. Otherwise, you might encounter symptoms such as a javax.naming.Name NotFoundException exception, in which case, you need to create uniquely named cells.	All federated nodes become members of the deployment manager cell , which you name in the Node, Host, and Cell Names page of the Profile Management Tool.
Custom profiles			
Node name	Linux UNIX Windows *shortHostName* Node *NodeNumber* where: • *shortHost Name* is the short host name. • *NodeNumber* is a sequential number starting at 01.	Avoid using the reserved names. Use a unique name within the deployment manager cell.	The name is used for administration within the deployment manager cell to which the custom profile is added. Use a unique name within the deployment manager cell.
Host name	Linux UNIX Windows The long form of the domain name server (DNS) name.	The host name must be addressable through your network. If you are planning to use Business Space, use a fully qualified host name.	Use the actual DNS name or IP address of your workstation to enable communication with it. See additional information about the host name following this table.

Host name considerations:

The host name is the network name for the physical workstation on which the node is installed. The host name must resolve to a physical network node on the server. When multiple network cards exist in the server, the host name or IP address must resolve to one of the network cards. Remote nodes use the host name to connect to and to communicate with this node.

IBM Business Process Manager is compliant to both Internet Protocol version 4 (IPv4) and version 6 (IPv6). Wherever you can enter IP addresses in the administrative console, or elsewhere, you can do so in either format. Note that if IPv6 is implemented on your system you must enter the IP address in IPv6 format, and conversely, if IPv6 is not yet available to you, enter IP addresses in IPv4 format. For more information on IPv6 refer to the following description: IPv6.

The following guidelines can help in determining the appropriate host name for your workstation:
- Select a host name that other workstations can reach within your network.
- Do not use the generic identifier, localhost, for this value.
- Do not attempt to install IBM Business Process Manager products on a server with a host name that uses characters from the double-byte character set (DBCS). DBCS characters are not supported when used in the host name.
- Avoid using the underscore (_) character in server names. Internet standards dictate that domain names conform to the host name requirements described in Internet Official Protocol Standards RFC 952 and RFC 1123. Domain names must contain only letters (upper or lower case) and digits. Domain names can also contain dash characters (-) as long as the dashes are not on the ends of the name. Underscore characters (_) are not supported in the host name. If you have installed IBM Business Process Manager on a server with an underscore character in the server name, access the server with its IP address until you rename it.

If you define coexisting nodes on the same computer with unique IP addresses, define each IP address in a domain name server (DNS) look-up table. Configuration files for servers do not provide domain name resolution for multiple IP addresses on a workstation with a single network address.

The value that you specify for the host name is used as the value of the hostName property in configuration documents. Specify the host name value in one of the following formats:
- Fully qualified domain name servers (DNS) host name string, such as xmachine.manhattan.ibm.com
- The default short DNS host name string, such as xmachine
- Numeric IP address, such as 127.1.255.3

The fully qualified DNS host name has the advantages of being totally unambiguous and flexible. You have the flexibility of changing the actual IP address for the host system without having to change the server configuration. This value for host name is particularly useful if you plan to change the IP address frequently when using Dynamic Host Configuration Protocol (DHCP) to assign IP addresses. A disadvantage of this format is being dependent on DNS. If DNS is not available, then connectivity is compromised.

The short host name is also dynamically resolvable. A short name format has the added ability of being redefined in the local hosts file so that the system can run the server even when disconnected from the network. Define the short name to 127.0.0.1 (local loopback) in the hosts file to run disconnected. A disadvantage of the short name format is being dependent on DNS for remote access. If DNS is not available, then connectivity is compromised.

A numeric IP address has the advantage of not requiring name resolution through DNS. A remote node can connect to the node you name with a numeric IP address without DNS being available. A disadvantage of this format is that the numeric IP address is fixed. You must change the setting of the hostName property in configuration documents whenever you change the workstation IP address. Therefore, do not use a numeric IP address if you use DHCP, or if you change IP addresses regularly.

Another disadvantage of this format is that you cannot use the node if the host is disconnected from the network.

Preparing necessary security authorizations

Depending on your security policy, you might need a user ID and password to complete tasks such as creating files and folders and accessing the database. Prepare secure user IDs to prevent problems when the servers attempt to access protected data.

- Complete the design of your database.
- Determine the authentication system to use, for example, Lightweight Directory Access Protocol (LDAP).
- Determine what controls are in place that affect the authorizations required for your IBM Business Process Manager installation.
- Identify the systems on which you are installing the product.

The security policies for your site enables global security which indicates that you require specific authorities to install software, create databases or tables, or access databases. To successfully install and operate the product you must do these steps.

To prepare security authorizations for an IBM Business Process Manager database, complete the following steps:

- Prepare a list of user IDs and passwords that have authority to install software on the systems. You must run the installation wizards for IBM Business Process Manager user IDs that have the authority to create files and folders.
- Prepare a list of user IDs, passwords, and roles that are needed for daily operations of the system:
  - Administrative console user IDs and roles to limit capabilities. You can have user IDs for configuring, administering, or monitoring roles.
  - User IDs for each system bus to authenticate system communications.
- Prepare a list of user IDs and passwords that the system uses to access the database tables that it uses during operation.
- Optional: Prepare a list of user IDs and passwords that the system uses to create databases or database tables during installation. Your site policies might restrict this authority to the database administrator. In this case, you must provide generated scripts to the administrator to create the databases or database tables.

You can install and operate your servers in a secure environment.

Installation directories for the product and profiles

The installation directories for IBM Business Process Manager are represented by several variables. The meaning of those variables can differ for a number of factors.

Variables used in the documentation

Several variables representing specific default directories are used throughout the documentation. These file paths are default locations. You can install the product and other components and create profiles in any directory for which you have write access. Multiple installations of IBM Business Process Manager products or components require multiple locations.

Here are the main variables used in the documentation:

install_root
> Installation location of IBM Business Process Manager. IBM Business Process Manager is always installed in the same location as the WebSphere Application Server Network Deployment installation with which it is associated.

profile_root
> Location of an IBM Business Process Manager profile.

How variable meanings can differ

The meaning of variables used to represent installation directories can differ based on whether you are installing the product on a clean workstation or on a workstation that has an existing installation of WebSphere Application Server or WebSphere Application Server Network Deployment. The variables can also differ depending on whether you are performing the installation as a root (Administrator on a Windows system) or nonroot user.

Limitations of nonroot installers

Root, Administrator, and nonroot users can install the product. The default directories the installation program provides differ based on whether the user has root (Administrator) privileges. Root and Administrator users can register shared products and install into system-owned directories (globally shared resources that are available to all users), while nonroot users cannot. Nonroot users can install only into directories they own.

Default directories for Typical Installation

The following tables show the default installation locations of the IBM Business Process Manager base installation and its profiles during a typical installation.

Table 8 shows the default installation root directory into which the installation program installs both IBM Business Process Manager and WebSphere Application Server Network Deployment for both root (Administrator) and nonroot users.

Table 8. install_root default directory

Default *install_root* for root or Administrator users	Default *install_root* for nonroot users
AIX `/opt/IBM/BPM/v8.0`	AIX `user_home/IBM/BPM/v8.0`
Linux `/opt/ibm/BPM/v8.0`	Linux `user_home/ibm/BPM/v8.0`
Windows `C:\IBM\BPM\v8.0`	Windows `C:\IBM\BPM\v8.0`

Table 9 shows the default installation directory for a profile named *profile_name* for both root (Administrator) and nonroot users.

Table 9. profile_root default directory

Default *profile_root* for root or Administrator users	Default *profile_root* for nonroot users
AIX `/opt/IBM/BPM/v8.0/profiles/profile_name`	AIX `user_homeIBM/BPM/v8.0/profiles/profile_name`
Linux `/opt/ibm/BPM/v8.0/profiles/profile_name`	Linux `user_home/ibm/BPM/v8.0/profiles/profile_name`
Windows `C:\IBM\BPM\v8.0\profiles\profile_name`	Windows `C:\IBM\BPM\v8.0\profiles\profile_name`

Table 10 on page 27 shows the DB2 Express installation location. DB2 Express is installed under the same directory as IBM Business Process Manager.

Table 10. DB2 Express default directory

Default DB2 Express binary location	Database Instance location
`Linux` /opt/ibm/BPM/v8.0/DB2	`Linux` Database instance is created under the `bpminst` user. For example: *user_home*/bpminst
`Windows` C:\IBM\BPM\v8.0\DB2	`Windows` The BPMINST database instance is created under the root (\) of the drive where IBM Business Process Manager is installed. For example, if IBM Business Process Manager is installed under `C:\IBM\BPM\v8.0\` then you will see `C:\BPMINST`.

Default directories for Custom Installation or existing installation of WebSphere Application Server or WebSphere Application Server Network Deployment

The following tables show the default installation locations of the product and its profiles. If you choose to install IBM Business Process Manager on top of an existing supported version of WebSphere Application Server or WebSphere Application Server Network Deployment, IBM Business Process Manager is installed into the same location. Table 11 shows the default installation root directory in such a case for both root (Administrator) and nonroot users.

Table 11. shows the default installation root directory into which the installation program installs both IBM Business Process Manager and WebSphere Application Server for both root (Administrator) and nonroot users.

Default *install_root* for root or Administrator users	Default *install_root* for nonroot users
`AIX` /usr/IBM/WebSphere/AppServer	`AIX` *user_home*/IBM/WebSphere/AppServer
`Linux` `Solaris` /opt/IBM/WebSphere/AppServer	`Linux` `Solaris` *user_home*/IBM/WebSphere/AppServer
`Windows` C:\Program Files\IBM\WebSphere\AppServer	`Windows` *user_home*\IBM\WebSphere\AppServer

Table 12. shows the default installation directory for a profile named profile_name for both root (Administrator) and nonroot users.

Default *profile_root* for root or Administrator users	Default *profile_root* for nonroot users
`AIX` /usr/IBM/WebSphere/AppServer/profiles/*profile_name*	`AIX` *user_home*/IBM/WebSphere/AppServer/profiles/*profile_name*
`Linux` `Solaris` /opt/IBM/WebSphere/AppServer/profiles/*profile_name*	`Linux` `Solaris` *user_home*/IBM/WebSphere/AppServer/profiles/*profile_name*
`Windows` C:\Program Files\IBM\WebSphere\AppServer\profiles*profile_name*	`Windows` *user_home*\IBM\WebSphere\AppServer\profiles*profile_name*

Default installation directories for IBM Installation Manager

Table 13 on page 28 shows two default directories related to the Installation Manager tool.

The directories under **Installation directory** are the defaults (per operating system) into which Installation Manager is installed.

The directories under **Agent data location directory** are the defaults (per platform) used by Installation Manager for data associated with the application, such as the state and history of operations performed by Installation Manager.

Values are given for both root (Administrator) and nonroot users.

For more information about the Agent data location, see Agent data location in the Installation Manager documentation. For more information on other defaults for Installation Manager, see Installing as an administrator or non-administrator in the Installation Manager documentation.

Table 13. Installation Manager default installation directories

Defaults for root or Administrator users	Defaults for nonroot users
Installation directory:	**Installation directory:**
`Linux` `/opt/IBM/InstallationManager/eclipse`	`Linux` *user_home*`/IBM/InstallationManager/eclipse`
`UNIX` `/opt/IBM/InstallationManager/eclipse`	`UNIX` *user_home*`/IBM/InstallationManager/eclipse`

`Windows` `C:\Program Files\IBM\Installation Manager\eclipse`	`Windows` `C:\Documents and Settings\`*userID*`\IBM\ Installation Manager\eclipse`
	
	`Vista` `Windows 7` `C:\ProgramData\IBM\ Installation Manager`

Agent data location directory:	**Agent data location directory:**
`Linux` `/var/ibm/InstallationManager`	`Linux` *user_home*`/var/ibm/InstallationManager`
`UNIX` `/var/ibm/InstallationManager`	`UNIX` *user_home*`/var/ibm/InstallationManager`

`Windows` `C:\Documents and Settings\All Users\Application Data\IBM\Installation Manager`
 	
`Vista` `Windows 7` `C:\ProgramData\IBM\ Installation Manager`
	`Windows` `C:\Documents and Settings\`*userID*`\ Application Data\IBM\Installation Manager`
	
	`Vista` `Windows 7` `C:\Users\`*userID*`\AppData\ Roaming\IBM\Installation Manager`

Choosing a stand-alone or network deployment environment

Choose a stand-alone environment to evaluate the product or to support development of applications and services. Choose a network deployment environment when your production environment needs additional features such as capacity, availability, scalability, and failover support.

A stand-alone environment is the easiest to install and configure, and requires little planning. A network deployment environment needs more extensive installation and configuration tasks that can involve several roles.

For a network deployment environment, you should carefully plan the characteristics with a goal of meeting the requirements of the work that business applications and services are to perform on it. There are multiple aspects to consider, including the following:
- Number of physical workstations and hardware resources that you require
- Number of clusters and cluster members required to support your business
- Number of databases required
- Authentication roles and security considerations
- The method that you will use to implement the deployment environment
- Other supporting resources such as a user registry (for security), one or more HTTP servers (for web content), necessary firewalls, load balancers, and so on.

Stand-alone environment
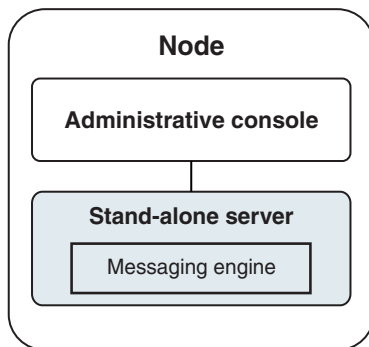
Figure 1. A stand-alone environment

To evaluate the product or to support development of applications and services, you can install samples to deploy a sample solution to the stand-alone server. You can explore the resources used for this sample in the administrative console.

To start with a stand-alone environment and then to include it into a network deployment environment, federate it into a deployment manager cell. You can do so only if no other nodes have been federated to that cell.

When you install the product software, you can choose to create the profile for a stand-alone development environment (**qwps**). The profile that is created is suitable only in a test scenario or to support application development. For a scenario in which you want a stand-alone server environment for production purposes, install the product software. Then use the Profile Management Tool or **manageprofiles** command-line utility to configure the stand-alone profiles.

Network deployment environment

A network deployment environment contains a collection of interconnected servers and clusters to run your service requester and provider enterprise applications and their mediation modules. The environment can also include application servers on WebSphere Application Server.
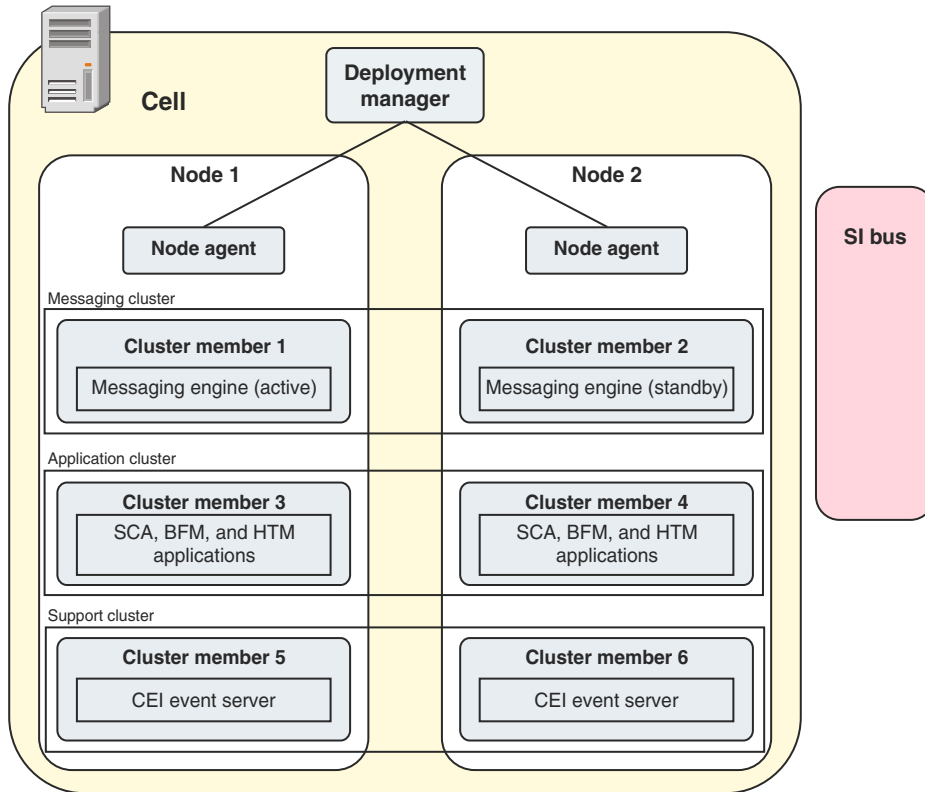
Figure 2. A network deployment environment

The servers and clusters run on one or more managed *nodes*, each of which corresponds to a logical or physical computer system.

Servers can be grouped into *clusters* to support load-balancing and failover.

A deployment environment of interconnected servers or clusters provides performance, availability, scalability, isolation, security, and stability characteristics that cannot be provided by a stand-alone server. In addition, you can manage all the servers or clusters from a centralized *deployment manager*.

A complete collection of servers and clusters managed by a deployment manager is configured and managed as a *deployment environment*.

To install a network deployment environment, install the product software, and then configure profiles for a deployment manager and one or more custom (managed) nodes. Later, you can create the deployment environment to be managed. You can create a *standardized* deployment environment from provided topology patterns, or you can configure clusters and servers to create a *customized* deployment environment.

How intended usage affects your choice of stand-alone or network deployment cluster topology pattern

The following table shows how the intended use of IBM Business Process Manager affects your choice of stand-alone or a network deployment cluster topology pattern, and the associated amount of planning involved:

Table 14. Choice of stand-alone or network deployment cluster topology pattern for intended use of IBM Business Process Manager

Intended use	Configuration path and planning activities
A single server Unit Test Environment (UTE)	The stand-alone profile configuration path, with little planning required.
A clustered test environment	Standard Remote Messaging and Remote Support topology pattern of network deployment environment, with little planning required.
A production environment, with good flexibility	Standard Remote Messaging and Remote Support topology pattern of network deployment environment, with little planning required.
A highly optimized production environment	A customized topology that addresses unique processing requirements and business requirements. Detailed planning required as described in this section of the documentation.

For more information about selecting an appropriate cluster topology pattern, refer to the related concepts links.

Related concepts:

"Topologies of a network deployment environment" on page 37
A topology is the physical layout of the deployment environment. You can create the topology that best addresses your business needs by choosing one of the patterns provided by IBM or by creating your own customized pattern.

"Considerations for selecting a topology" on page 46
Selecting an appropriate topology for your deployment environment depends upon several factors.

Planning your network deployment environment

Setting up a network deployment environment involves many decisions, such as the number of physical workstations and the type of pattern you choose. Each decision affects how you set up your deployment environment.

Before you plan your deployment environment complete the following tasks:
- Choose a database type
- Identify available resources
- Identify necessary security authorizations

When you plan the layout of interconnected servers, you must make some decisions. These decisions influence trade-offs that you make between the available hardware and physical connections, the complexity of the management and configuration and requirements such as performance, availability, scalability, isolation, security, and stability.

1. Identify the functional requirements of the deployment environment.

    a. Identify the features or runtime capabilities of your deployment environment.

       Consider whether the deployment environment will support other IBM Business Process Manager products and non-BPM products in addition to IBM Business Process Manager.

    b. Identify the component types that you will deploy.

       Consider the component types and the interactions between components as part of the requirements.

    c. Identify the import and export implementation types and transports.

       Consider the resources needed for the databases or Java™ Message Service (JMS) resources and the need for business events and their transmission mechanism.

d. Identify any functional requirements that are not related to applications.

      Consider security servers, routers, and any other hardware or software requirements to handle business events.

2. Identify the capacity and performance requirements for your environment.

3. Decide on the number of physical servers that you need for each function.

4. Design your deployment environment.

   Decide on the pattern. For IBM Business Process Manager, you can select one of four established topology patterns:

   - Single Cluster
   - Remote Messaging
   - Remote Messaging and Remote Support
   - Remote Messaging, Remote Support, and Web

   If none of these patterns meets your needs, you can use the administrative console to create a custom deployment environment.

   Note: If your configuration supports multiple IBM Business Process Manager and non-BPM products in addition to, and compatible with, IBM Business Process Manager, the patterns of those products would be available to you when you create your deployment environment.

   For more information about the patterns and the differences between them, see "Topologies of a network deployment environment" on page 37.

5. Understand the methods available to you for configuring your deployment environment.

   You can configure the following types of deployment environments for IBM Business Process Manager:

   - A standardized network deployment environment

     A standardized network deployment environment is based on a topology pattern template included with the software and implemented by using the Deployment Environment configuration wizard or wsadmin commands.

     You can use the Deployment Environment Configuration wizard to create clusters with the Single Cluster, Remote Messaging, Remote Messaging and Remote Support, and (if applicable) Remote Messaging, Remote Support, and Web cluster topology patterns.

   - A customized network deployment environment

     A customized network deployment environment is a configuration that you create from the administrative console, as opposed to a "template-based" configuration from the Deployment Environment wizard.

     You should create a customized network deployment environment only if the topology patterns that are included with the software do not meet your configuration needs.

     As is the case with the standardized environment, you can create a customized network deployment environment with wsadmin.

Overview: Deployment environment topologies and patterns

A network deployment environment can have many topologies, and can be created from several standard topology patterns.

What is a topology?

A topology is the physical layout of the *deployment environment* required to meet your business needs for capacity, availability, and scalability.

You can set up topologies for both the Process Center and Process Server components of IBM Business Process Manager.

Many factors affect how you design and implement your topology. For example, you must consider business and application requirements, resource requirements and constraints, the intended purpose of the environment, and the operating system.

IBM Business Process Manager includes patterns for the following topologies, which you can use to address many business scenarios, from proof-of-concept (POC) to a fully functional production environment:

- Single Cluster
- Remote Messaging
- Remote Messaging and Remote Support
- Remote Messaging, Remote Support, and Web

Each topology pattern has certain design characteristics that address a particular business need. For example, on distributed systems, the Single Cluster topology pattern is typically used for a testing or proof of concept scenario. On z/OS systems, this topology pattern is the default pattern and can be used in production environments.

The design characteristics of each topology have been captured as *topology patterns* that are supplied as configuration templates with the product.

You are not obligated to use a standardized (IBM-supplied) topology pattern. If none of the topology patterns address your specific need, you can create a custom topology pattern.

The purpose of deployment environment patterns

A deployment environment topology pattern specifies the constraints and requirements of the components and resources involved in a deployment environment. There are IBM-supplied topology pattern for each topology layout. These topology patterns provide rules and guidelines for component interaction that are characteristic of the most commonly used BPM topology patterns. The IBM-supplied topology patterns are based on well-known and tested configuration scenarios. They contain a repeatable and automated method of creating a deployment environment. Each topology pattern is designed to meet the configuration requirements and business needs of the associated topology. Using topology patterns helps you create a deployment environment in the most straightforward way.

Because the deployment environment topology patterns represent recommended topologies with component configurations that work together, you can be sure that you are building a fully functional deployment environment. You can use the configuration rules of a deployment environment topology pattern to generate a fast path configuration. This action is possible because many design decisions are implemented in the topology pattern; for example, which components to configure, and which default parameters and resources are needed.

Each supplied deployment environment topology pattern addresses a specific set of requirements. Most requirement sets can be met when you use one of these topology patterns. To select a topology pattern, complete all of the following steps:

- Understand the requirements of the business solution that you are creating.
- Review and understand the capabilities and characteristics of the IBM-supplied topology patterns.
- Decide which topology pattern to use.

  If none of the IBM Business Process Manager topology patterns suit your needs, you can use the administrative console or scripting (wsadmin commands) to create a customized topology pattern.

Databases and deployment environments

Before you create and configure a network deployment environment, you must configure your database and create the required database tables. At a minimum, to use IBM Business Process Manager, you need to configure the following databases on your database management system:

- The Common database (CMNDB)
- The Process Server database (BPMDB)
- The Performance Data Warehouse database (PDWDB)

For a stand-alone server configuration, use the **Typical** installation option to configure these databases and create the required database tables automatically.

For a network deployment environment (customized deployment environment or standardized deployment environment), you or your database administrator must configure the databases outside the installer. Additional databases are required to support additional functionality. For example, if your IBM Business Process Manager configuration includes Business Process Choreographer, Business Space, or Common Base Event monitoring, you or your database administrator must configure these databases and use supplied utilities or scripts to create the required database tables. You must do this configuration before you can create the network deployment environment.

For more information, see Planning your database configuration.

Functions of IBM-supplied deployment environment topology patterns

Any IBM Business Process Manager deployment contains a basic set of functions that together form a complete production environment.

To design a robust deployment environment, you must understand the functionality that each cluster can provide in an IBM-supplied topology pattern or custom deployment environment. You can allocate a specific type of function (for example, the support infrastructure function) to a particular cluster. Understanding the functions can help you choose the deployment environment topology pattern that best meets your needs.

For network deployment, clusters can collaborate to provide specific functionality to the environment. Depending on your requirements, you assign specific functions to each cluster within the deployment environment, to provide performance, failover, and capacity.

The clusters configured in a deployment environment provide the following functions.

The functions can exist in a single cluster, or can be spread across multiple clusters. Each standardized (IBM-supplied) topology pattern creates a different number of clusters to support the functions. The number of clusters in your deployment environment depends on the topology pattern that you are using.

Application deployment target
An application deployment target is the set of servers (cluster) to which you install your applications (for example, human tasks, business processes, and mediations). Depending on which deployment environment topology pattern you choose, the application deployment target might also provide messaging infrastructure and supporting infrastructure functions. Select the appropriate product depending on the type of applications that you intend to deploy.

- If the applications contain human task or business process artifacts, install Process Server.
- If the applications contain mediation modules only, install WebSphere Enterprise Service Bus.

In a Single Cluster topology pattern, the application deployment target provides the entire functionality of the deployment environment.

Supporting infrastructure

The supporting infrastructure includes the Common Event Infrastructure (CEI) server and other infrastructure services used to support your environment and manage your system. These services include:

- Business rules
- Selectors
- Human tasks
- Business processes

Important: You must use a custom profile with the same product functionality for this node as you did for the application deployment target cluster.

The business rules are not tied to the Supporting infrastructure cluster. In fact, business rules can exist and work everywhere in the cell. The business rules administrative function (performed from the Business Rules Manager) can be deployed on the Supporting Infrastructure cluster (in a three cluster configuration) or in the Web application infrastructure cluster (in the four cluster configuration). The same principle applies to the human tasks and business processes. The human tasks and business processes run on the Application deployment target cluster, because that is where the human task and business process containers are configured. However, you administer processes and tasks from the Business Process Choreographer Explorer, which can reside on the Supporting Infrastructure cluster (in a three cluster configuration) or on the Web application infrastructure cluster (in a four cluster configuration).

Messaging engine infrastructure

The messaging infrastructure is the set of servers (cluster) where the messaging engines are located. The messaging infrastructure is used to provide asynchronous messaging support for your applications and for the internal messaging needs of the IBM Business Process Manager components. The messaging engines enable communication among the nodes in the deployment environment. Your cluster can consist of members on nodes created with WebSphere Application Server instead of IBM Business Process Manager if the cluster solely provides the messaging function.

Web application infrastructure

Consists of a cluster where the web-based components Business Process Choreographer Explorer, Business Rules Manager, Business Space, Process Portal, and REST API services are located.

For topologies in all environments, the fundamental pieces of IBM Process Server and WebSphere ESB are always similar. In all IBM Process Server and WebSphere ESB cells, the deployment manager is the central point of administration for the cell.

The following diagram illustrates the points of interest in an IBM Process Server deployment environment configured using a Remote Messaging and Remote Support topology pattern. This topology pattern is identical to the Process Center deployment environment, except that the Process Center deployment environment has a Process Center console in the application deployment target cluster. The Process Server network deployment environment does not include a Process Center console.
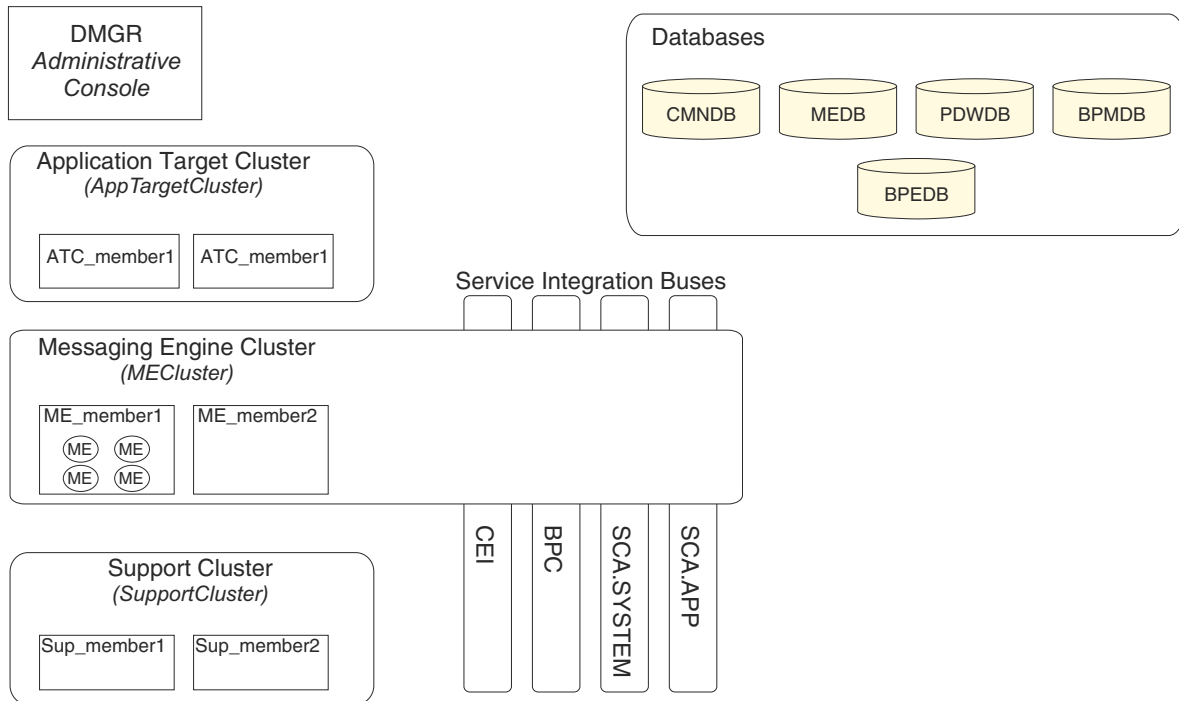
This diagram includes:

- **Deployment Manager** (DMGR): A server that manages operations for a logical group or cell of other servers.
- **Application Target Cluster**: The deployment target for customer applications. This cluster is configured to provide functionality for BPEL processes, human tasks, process applications, and SCA. In a Process Center deployment, this cluster also includes the Process Center console.
- **Databases**:
  - Common database (CMNDB) - Required. Contains tables shared on a cell-wide basis for multiple IBM BPM Advanced Process Server and WebSphere ESB capabilities.
  - Process Server database (BPMDB) - Required. Contains tables for IBM BPM Advanced Process Server capabilities.
  - Performance Data Warehouse database (PDWDB) - Required. Contains tables for Performance Data Warehouse capabilities.

– Messaging Engine database (MEDB) - Each messaging engine requires a unique set of database tables.

– Business Process database (BPEDB) - Each deployment target that is configured for Business Process Choreographer requires a set of tables for Business Process Choreographer functions.

- **Service Integration Buses (SIBuses)**: At least one server or cluster is a member of each of the SIBuses. On multiplatforms, the messaging engine cluster is a member of each of the SIBuses. The bus member hosts a single messaging engine (ME) for each SIBus that it is associated with.

- **Messaging Engine (ME) Cluster**: Hosts the messaging engines. The ME Cluster is a member of each of the four service integration buses.

- **Support Cluster**: The Support Cluster hosts the applications that provide some utility for, but do not contribute to the workload of, the Application Target cluster. For example, the Support Cluster might host the Business Process Rules Manager.

Topologies of a network deployment environment

A topology is the physical layout of the deployment environment. You can create the topology that best addresses your business needs by choosing one of the patterns provided by IBM or by creating your own customized pattern.

Related concepts:

"Considerations for selecting a topology" on page 46
Selecting an appropriate topology for your deployment environment depends upon several factors.

"Topology patterns and supported product features" on page 48
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

"Choosing a stand-alone or network deployment environment" on page 28
Choose a stand-alone environment to evaluate the product or to support development of applications and services. Choose a network deployment environment when your production environment needs additional features such as capacity, availability, scalability, and failover support.

Single Cluster topology pattern

The *Single Cluster* topology pattern is an IBM-supplied topology pattern. In a Single Cluster topology pattern, all the functions of the deployment environment are combined into a single cluster.

This is the default pattern for IBM Business Process Manager for z/OS.

A Single Cluster topology pattern is ideal for limited hardware. Because all the components are installed in the same cluster, fewer physical machines are required. However, because each server instance must run the supporting applications and your integration applications, you need more memory for the individual Java Virtual Machines (JVMs). In addition, one or more members of the cluster must also run the messaging engines required for asynchronous interactions. Thus, the Single Cluster topology pattern is typically used for proof of concept, development, and testing environments.

Combining all aspects of the IBM Business Process Manager environment into a single cluster has other implications aside from the increased memory requirements.

- Because asynchronous interactions (involving JMS and MQ/JMS bindings), human tasks, state machines, and long-running business processes can make extensive use of the messaging infrastructure, a single cluster environment is not ideal for applications with these components.

- Any messaging requirements must be kept to a minimum with this topology pattern (except for z/OS).

- Service Component Architecture (SCA) internal asynchronous invocations, the Java Message Service (JMS), and MQ messaging bindings do not support multiple messaging engines in the same cluster.

If necessary, choose one of the other topology patterns in which the messaging infrastructure is in a separate cluster from the application deployment target.

The Single Cluster topology pattern is suitable for scenarios that are focused on running applications and on synchronous invocations. This topology pattern is also not ideal if you intend to make extensive use of the Common Event Infrastructure (CEI). Generating events and CEI-related messaging traffic, places an additional burden on the cluster members.

From an administrative and scalability perspective, the Single Cluster topology pattern has advantages. A single cluster where each member runs all the IBM Business Process Manager components are simpler to administer. Instead of several server instances in multiple clusters, you have a single cluster with fewer members. If the needs of your environment grow, scaling the infrastructure is a simple matter of adding additional nodes and cluster members. Thus, the process of adding capability is simple, but all components are scaled at the same rate. For example, each additional cluster member adds CEI processing whether you need it or not. If the messaging engines spread across server members use policies, there could be some additional administrative effort in creating and maintaining the policies.

In a Single Cluster topology pattern, all deployment environment functions and functional groups of components run on a single cluster:
- The applications:
  - Business Process Choreographer (BPC) container
  - Process Server
- The messaging bus members:
  - Business Process Choreographer bus members
  - Common Event Interface (CEI) bus members
  - Performance Data Warehouse (PDW) bus members
  - Process Server bus members
  - Service Component Architecture (SCA) application bus members
  - SCA system bus members
- The support infrastructure applications:
  - CEI server application
  - Performance Data Warehouse
- The web applications:
  - Business Process Choreographer Explorer
  - Business Rules manager
  - Business Space
  - Process Portal
  - REST API Services
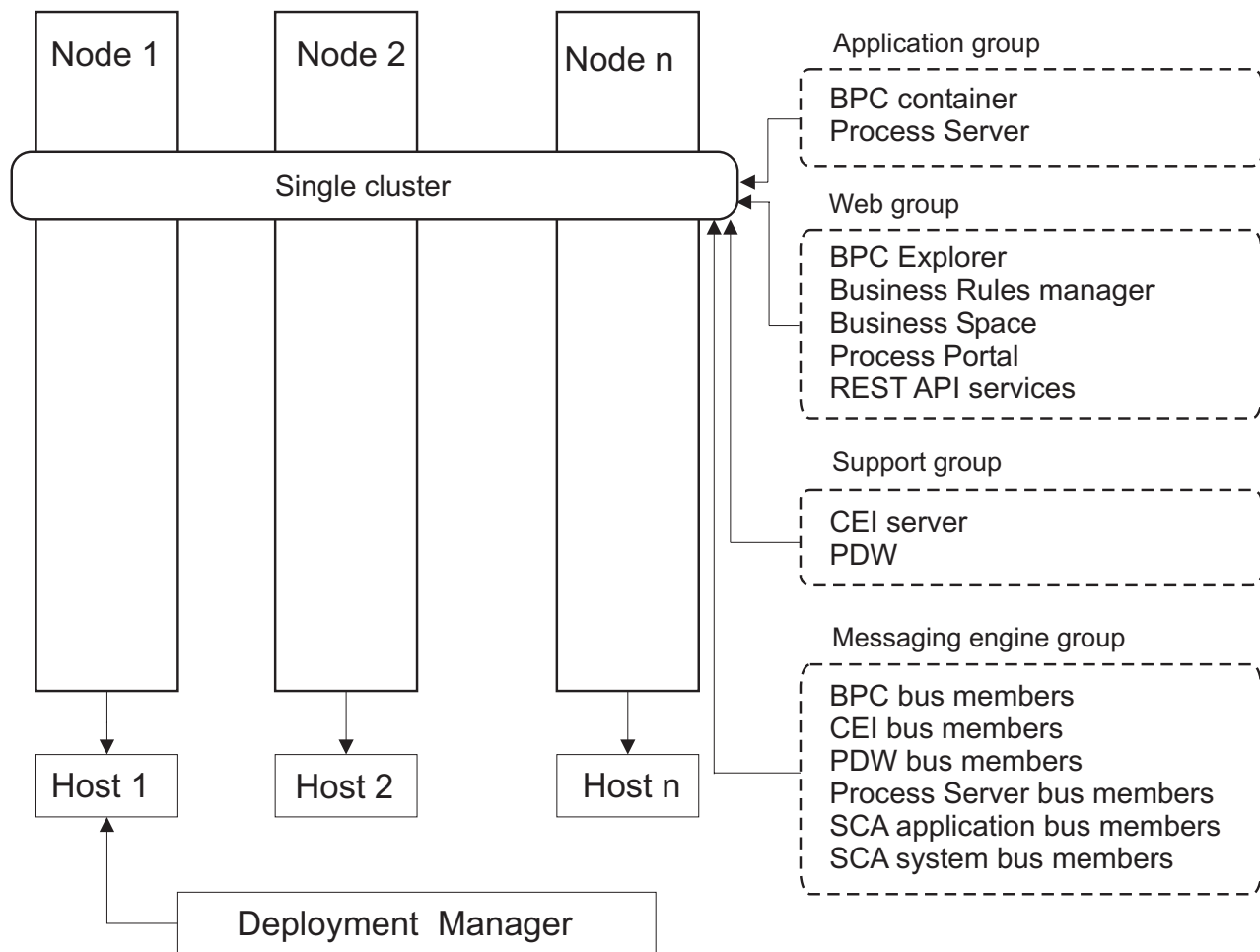
Figure 3. Single cluster topology pattern

Remote Messaging topology pattern

The *Remote Messaging* topology pattern is an IBM-supplied topology pattern. In a Remote Messaging topology pattern, the deployment environment functions are divided between two separate clusters.

The Remote Messaging topology pattern provides a separate cluster for the messaging function. This topology pattern is suitable for scenarios involving asynchronous invocations, because the cluster can be scaled for this load. The components are divided between the two clusters.

For environments that must support numerous human tasks, long-running business processes, state machines, and asynchronous interactions, a Remote Messaging topology pattern has advantages over the Single Cluster topology pattern.

Separating the messaging infrastructure into a separate cluster removes the messaging overhead from the application target cluster. When you have a separate messaging infrastructure, you need less memory for the application target cluster members. This topology pattern also differs from the Single Cluster topology pattern in terms of the hardware required. Because there are two clusters with multiple cluster members, the hardware requirements are greater for distributed environments.

From an administrative perspective, the requirements for the Remote Messaging topology pattern are greater than the requirements for the Single Cluster topology pattern. Additional clusters and additional

cluster members increase the administrative effort required. In addition, because you are distributing the messaging engines across the members of the messaging cluster, you must create and maintain policies.

In the Remote Messaging topology pattern, the supporting applications and the Common Event Interface (CEI) components are still part of the application target cluster. Thus, for environments that make extensive use of CEI, the Remote Messaging topology pattern might not be ideal either. For small to medium-sized businesses, or for businesses without extensive monitoring or auditing requirements, this topology pattern is generally suitable.

The scalability options for the Remote Messaging topology pattern are as straightforward as the options for the Single Cluster topology pattern. Because the messaging engines are subject to one of n policies (each messaging engine is active on only one server), adding additional members to the messaging cluster has little effect. When you use policies to spread the messaging engines across server members, you can divide the messaging burden across a maximum of three servers. (The SCA.SYSTEM and SCA.APPLICATION engines are active on the same server.) Thus, adding more than three cluster members to the messaging cluster has no effect on the processing capability of the messaging infrastructure. Scaling the application target cluster is relatively easy. If you need additional processing capability for your applications or for the supporting infrastructure, you can add additional nodes and members to the application target cluster.

In a two-cluster topology pattern, the messaging members run on the messaging cluster and all other all deployment environment functions and functional groups of components run on a the application deployment target cluster.

The application deployment target cluster hosts the following:
- The applications:
  - Business Process Choreographer (BPC) container
  - Process Server
- The support infrastructure applications:
  - CEI server application
  - Performance Data Warehouse
- The web applications:
  - Business Process Choreographer Explorer
  - Business Rules manager
  - Business Space
  - Process Portal
  - REST API Services

The messaging infrastructure cluster hosts the following:
- Business Process Choreographer bus members
- Common Event Interface (CEI) bus members
- Performance Data Warehouse (PDW) bus members
- Process Server bus members
- Service Component Architecture (SCA) application bus members
- SCA system bus members
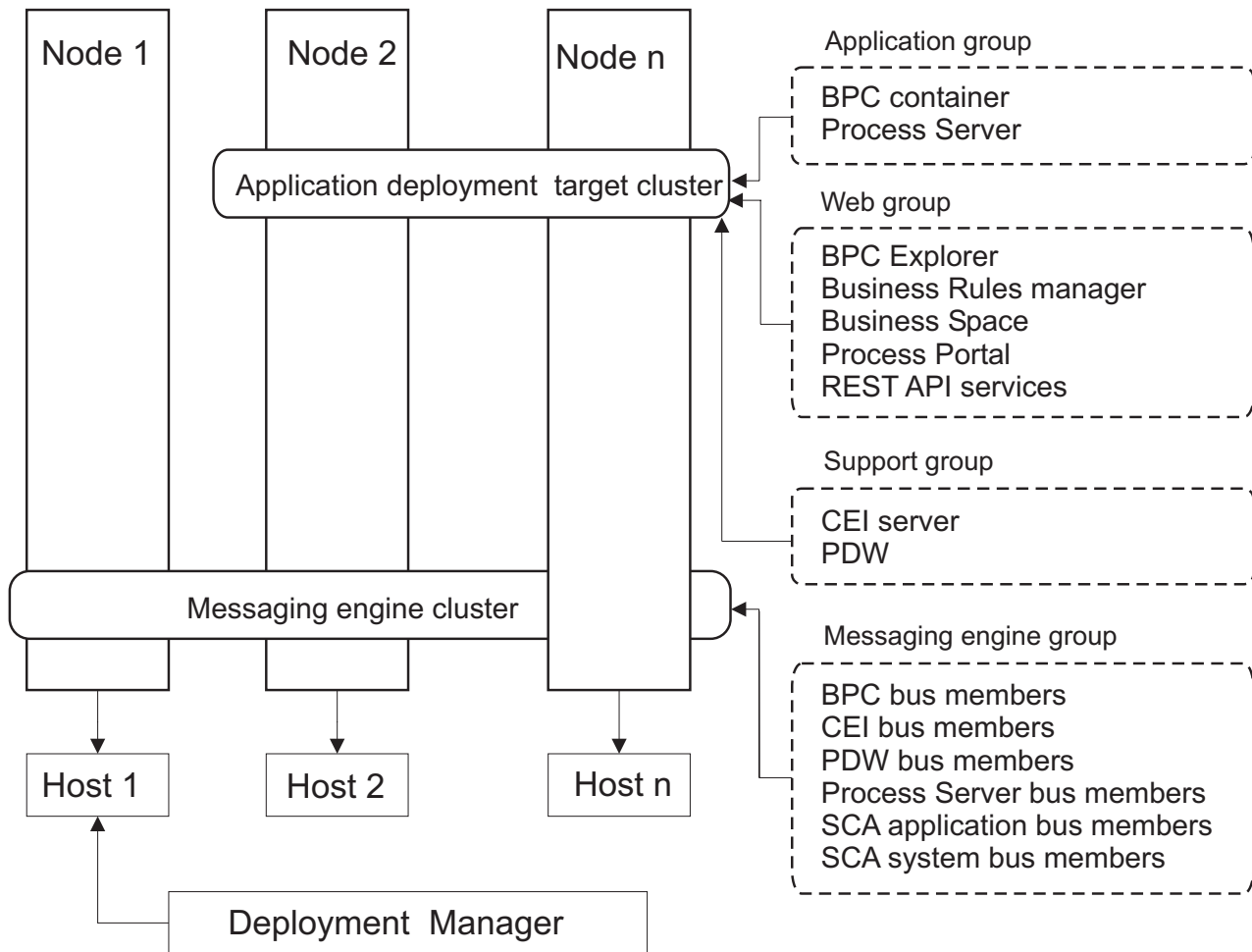
Figure 4. Remote Messaging topology pattern

Remote Messaging and Remote Support topology pattern

The *Remote Messaging and Remote Support* topology pattern is an IBM-supplied topology pattern. In a Remote Messaging and Remote Support topology pattern, the deployment environment functions are divided among three separate clusters.

With this three-cluster topology pattern components are divided among the messaging, support, and application deployment target clusters. For users of IBM Business Process Manager Standard, this topology pattern was the default and preferred topology. Now, for IBM Business Process Manager Standard the default and preferred topology is four clusters, with the additional web cluster hosting Business Space, Process Portal, and REST API services. For more information about the four-cluster topology, see Remote Messaging, Remote Support, and Web topology pattern.

When you create three clusters, each with its own functions and applications, you add an additional administrative burden. As you add clusters and cluster members, your performance tuning plan and the troubleshooting burden can expand greatly. Spreading messaging engines across the members of the messaging cluster also adds to the administrative burden associated with creating and maintaining policies.

From a scalability standpoint, the Remote Messaging and Remote Support topology pattern provides good flexibility. Because each of the distinct functions within IBM Business Process Manager is divided among the three clusters, you can pinpoint performance bottlenecks and adjust the cluster size fairly

easily. If you need additional Common Event Interface (CEI) processing, you can simply add a node and cluster member to the support cluster. Similarly, if you need more processing capability for your business processes or human tasks, you can add additional nodes and members to the application target cluster. Because expanding the messaging infrastructure beyond three cluster members has no effect on processing capability, the scalability limitations of the Remote Messaging topology pattern also apply to the Remote Messaging and Remote Support topology pattern.

Because the application target cluster runs your business integration applications only, performance tuning and diagnostics are simpler than in the topology patterns where the application target cluster has additional responsibilities. The Remote Messaging and Remote Support topology pattern is also ideal for environments that make extensive use of CEI for monitoring and auditing (including environments with IBM Business Monitor). When you separate the support infrastructure into its own cluster, you have a dedicated set of cluster members for CEI and for supporting applications.

The application deployment target cluster hosts the following:
- Business Process Choreographer (BPC) container
- Process Server

The messaging infrastructure cluster hosts the following:
- Business Process Choreographer bus members
- Common Event Interface (CEI) bus members
- Performance Data Warehouse (PDW) bus members
- Process Server bus members
- Service Component Architecture (SCA) application bus members
- SCA system bus members

The support infrastructure cluster hosts the following:
- The support applications:
  - CEI server application
  - Performance Data Warehouse
- The web applications:
  - Business Process Choreographer Explorer
  - Business Rules manager
  - Business Space
 - Process Portal
  - REST API Services
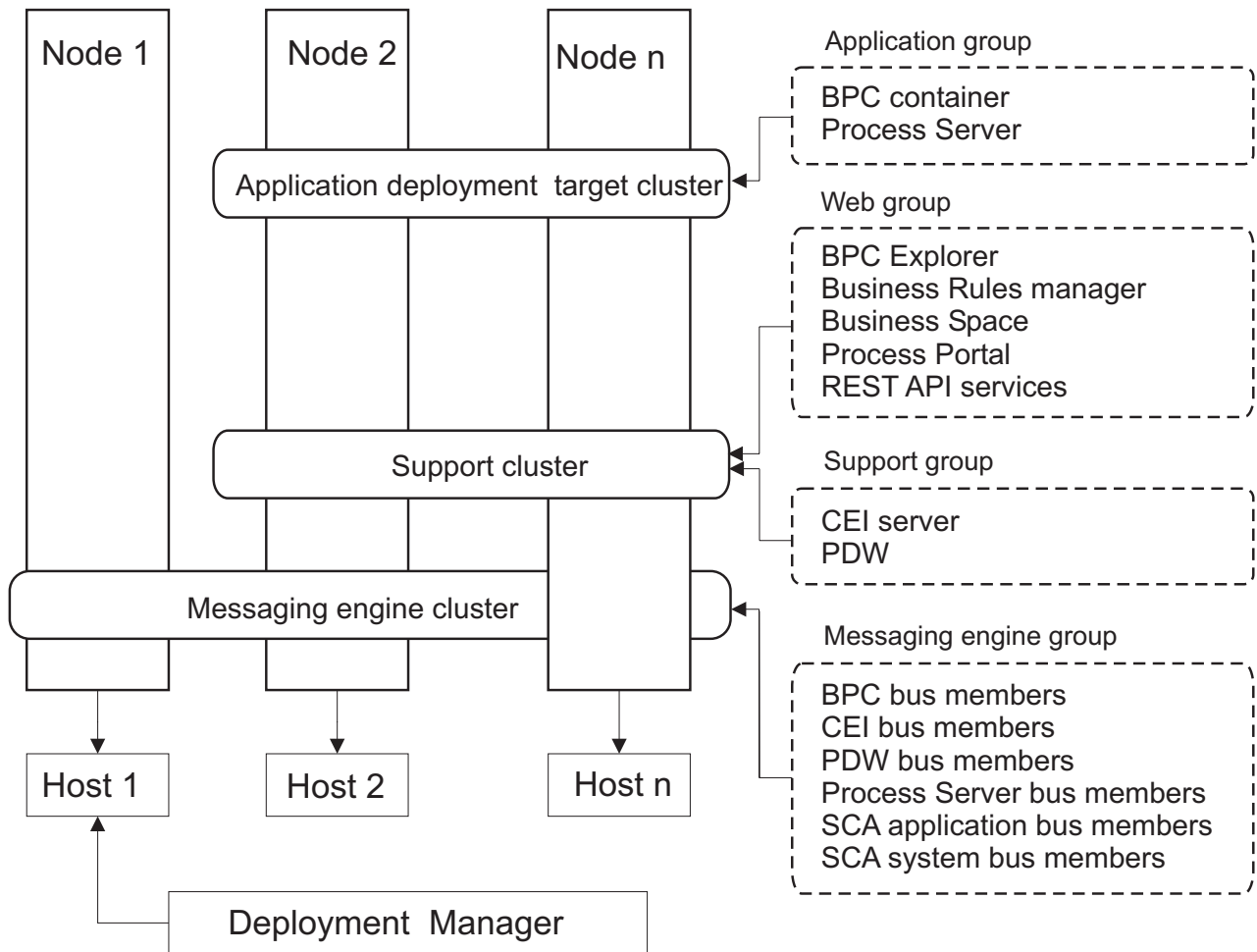
Figure 5. Remote Messaging and Remote Support topology pattern

Important: In this topology you must also configure a routing server such as IBM HTTP Server, WebSphere Application Server proxy server, or a reverse proxy server to ensure that requests that are intended for Process Portal are directed to the correct cluster.

Resource allocation example

The following figure shows one way to use the Remote Messaging and Remote Support topology pattern to allocate resources. The figure shows three hosts. Host A has Server 1 and Server 3; Host B has Server 2, Server 4, and Server 5 and Host C has Server 6 and Server 7. Because the heaviest load for this installation is for application use, more resources for Server 1, Server 2, and Server 6 are allocated for the application deployment target cluster (Cluster 3) than for the other functions.

Important: Load balancing is not available for the default configuration Remote Messaging and Remote Support topology pattern. That configuration uses a single messaging engine bus, while the load balancing feature requires at least two messaging engine buses.
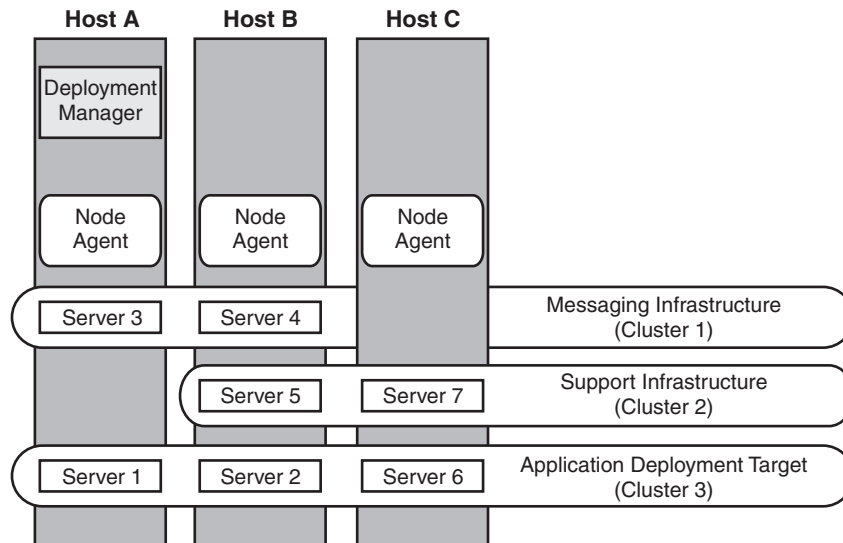
Figure 6. Resource allocation example

Remote Messaging, Remote Support, and Web topology pattern

The *Remote Messaging, Support and Web* topology pattern is an IBM-supplied topology pattern. In this pattern, the deployment environment functions are divided among four separate clusters.

The Remote Messaging, Support and Web topology pattern is the preferred topology for IBM Business Process Manager Standard and IBM Business Process Manager Advanced. It is also the default for the `configureNode` command, except for z/OS.

This four-cluster topology pattern is similar to the Remote Messaging and Remote Support topology pattern, except that supporting web applications reside on their own cluster.

The application deployment target cluster hosts the following:
- Business Process Choreographer (BPC) container
- Process Server

The messaging infrastructure cluster hosts the following:
- Business Process Choreographer bus members
- Common Event Interface (CEI) bus members
- Performance Data Warehouse (PDW) bus members
- Process Server bus members
- Service Component Architecture (SCA) application bus members
- SCA system bus members

The support infrastructure cluster hosts the following:
- CEI server application
- Performance Data Warehouse

The web application cluster hosts the following:
- Business Process Choreographer Explorer

- Business Rules manager
- Business Space
- Process Portal
- REST API Services

In a Remote Messaging, Support and Web topology pattern, the deployment environment functions are divided among four separate clusters. One cluster is used for messaging functionality, one cluster for support functionality, one cluster for applications, and one cluster for web-based functions. In addition to the ability to precisely control the individual components in your environment, the advantages of this topology pattern are similar to the advantages of the Remote Messaging and Remote Support topology pattern.
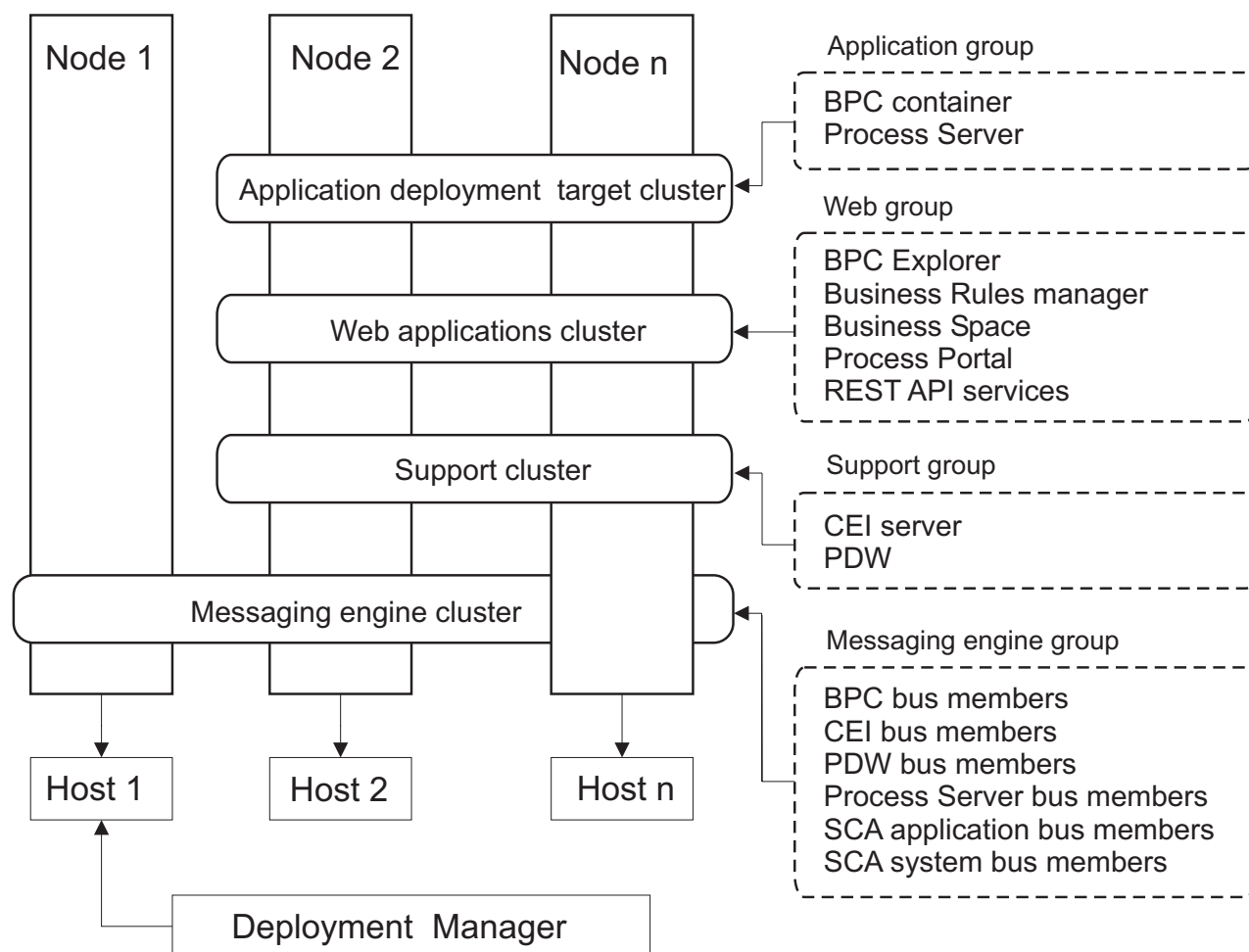
Figure 7. Remote Messaging, Support and Web topology pattern

Important: In this topology you must also configure a routing server such as IBM HTTP Server, WebSphere Application Server proxy server, or a reverse proxy server to ensure that requests that are intended for Process Portal are directed to the correct cluster.

Customized topology
A customized topology addresses the processing and business requirements unique to your situation. It is not an IBM-supplied topology pattern, but rather a topology that you create and then tailor to your specific needs.

If you need to define your own deployment environment topology, a customized topology is by far the most flexible. The IBM-supplied topologies (Single Cluster, Remote Messaging, Remote Messaging and Remote Support, and Remote Messaging, Remote Support, and Web), deploy all IBM Business Process Manager components to their default locations. You might or might not need the additional overhead associated with these components. For example, if your organization does not need Common Event Interface (CEI), you could create a custom topology that removes CEI support from your environment. Similarly, if your organization has governance rules that prevent you from taking advantage of the Business Rules Manager, you could remove it from your deployment environment.

Except for the ability to control the components deployed in your environment, the advantages of custom topologies are similar to the advantages of the Remote Messaging and Remote Support topology. The disadvantages are also similar.

Important: Creating a customized network deployment environment is more labor-intensive than using an IBM-supplied topology pattern, which can be created from the Deployment Environment configuration wizard. Before you attempt to create a customized network deployment environment, make sure that none of the IBM-supplied topologies address your needs. You should attempt to create a customized network deployment environment only if you have a solid understanding of the features and functions of the administrative console.

Considerations for selecting a topology

Selecting an appropriate topology for your deployment environment depends upon several factors.

When you select a topology pattern, consider the following factors:
- Available hardware resources
- Application invocation patterns
- Types of business processes that you plan to implement (interruptible versus non-interruptible)
- How heavily you intend to use the Common Event Infrastructure (CEI)
- Individual scalability requirements
- Administrative effort involved

The Remote Messaging, Support and Web four cluster topology pattern is the preferred topology for IBM Business Process Manager Standard and IBM Business Process Manager Advanced, but the choice ultimately depends upon your individual requirements. The four cluster topology is also the default for the `configureNode` command, except for z/OS. If you select a three or four cluster topology, you must configure a routing server for Business Space.

The IBM-supplied topologies can be applied to both Process Server and Process Center topologies. Therefore, your Process Center and Process Server network deployment environments can be organized in a similar way. The procedures for creating environments for Process Server and Process Center based on IBM-supplied topologies are also similar. The only difference related to IBM-supplied patterns is the recommended patterns for a production environment, and the components configured on the clusters for those patterns.

For information on the components, features and functionality available in each of the IBM Business Process Manager configurations, see IBM Business Process Manager V8.0 configuration capabilities

Condensed topology pattern selection criteria

Consider the information listed in the following table, which is a quick guide to selecting your production topology. This table provides a condensed list of the advantages and disadvantages of each of the topology patterns.

For information about which BPM products support the supplied topology patterns, see *Topology patterns and supported BPM product features*.

Table 15. Considerations for selecting a topology for your deployment environment

Consideration	Topology Pattern			
	Single cluster	Remote Messaging	Remote Messaging and Remote Support	Remote Messaging, Remote Support and Web
Number of clusters to maintain	One cluster for all components	Two clusters: One cluster for applications and for the support infrastructure One cluster for messaging	Three clusters: One cluster for applications One cluster for the support infrastructure One cluster for messaging	Four clusters: One cluster for applications One cluster for Web interfaces One cluster for support infrastructure One cluster for messaging
Hardware requirements	Can be implemented on limited hardware	More hardware required for distributed environments	More hardware required for distributed environments	Most hardware intensive
Asynchronous interactions	Use should be minimal	Use must be balanced against resource availability	Ideal environment for asynchronous interactions	Ideal environment for asynchronous interactions
Long-running processes, state machines, and human tasks	Use should be minimal	Use must be balanced against resource availability	Ideal environment for interruptible processes, state machines, and human tasks	Ideal environment for interruptible processes, state machines, and human tasks
Heavy CEI activity	Not recommended (Light CEI use should be balanced against resource usage.)	Not recommended (Light CEI use should be balanced against resource usage.)	Ideal environment for heavy CEI use	Ideal environment for heavy CEI use
Administrative burden	Relatively small	Requires additional effort	Requires additional administrative effort	Requires most administrative effort
Scalability	All components scaled at the same rate	Messaging cluster scalability limited (no benefit beyond three servers) All other components scaled at the same rate	Easy to scale All functions separated Messaging cluster scalability still limited (no benefit beyond three servers)	Easiest to scale All functions separated Messaging cluster scalability still limited (benefit comes when other BPM products are introduced)
Routing server	Optional for load balancing and high availability	Optional for load balancing and high availability	Required for Process Portal – and can also be used for load balancing and high availability	Required for Process Portal – and can also be used for load balancing and high availability

The routing server can be IBM HTTP Server, WebSphere Application Server proxy server, or any other web server, reverse proxy server, or network layer IP sprayer.

Related concepts:

"Topology patterns and supported product features"
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

"Load balancing and failover with IBM HTTP Server" on page 51
In a network deployment environment, you can configure IBM HTTP Server as a proxy server for workload balancing and failover purposes. Instead of incoming HTTP requests going directly to an application server, they go to the proxy server, which then distributes the requests across multiple application servers that perform the work.

"Topologies of a network deployment environment" on page 37
A topology is the physical layout of the deployment environment. You can create the topology that best addresses your business needs by choosing one of the patterns provided by IBM or by creating your own customized pattern.

"Choosing a stand-alone or network deployment environment" on page 28
Choose a stand-alone environment to evaluate the product or to support development of applications and services. Choose a network deployment environment when your production environment needs additional features such as capacity, availability, scalability, and failover support.

Topology patterns and supported product features

A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

If you are using the Deployment Environment Configuration wizard on the administrative console to create the deployment environment, the availability of topology patterns on which you base your deployment environment varies depending on the following conditions and configuration decisions:

* The platform on which you have installed IBM Business Process Manager
* The primary deployment environment feature and the complimentary feature

Table 16 shows the relationship between the topology patterns and product features.

Table 16. Available supplied patterns and their relationship to product features

Topology pattern	Number of clusters	Description	Supported BPM products and features	Default status
Single Cluster	1	Messaging, application deployment target, and application support functions are contained in a single cluster. This topology pattern is useful for synchronous messaging, proof of concept, or application testing environments. A Single Cluster topology pattern is ideal for limited hardware. Because all of the components are installed in the same cluster, fewer physical machines are required.	Supported by the following products, or any combination of these products: • IBM Business Process Manager Advanced and Standard configurations • IBM Business Monitor	

Table 16. Available supplied patterns and their relationship to product features (continued)

Topology pattern	Number of clusters	Description	Supported BPM products and features	Default status
Remote Messaging	2	This topology pattern separates the messaging environment from the application deployment target and the application support functions. Use this topology pattern when message throughput is a critical requirement for your daily operation. This topology pattern is highly recommended for asynchronous messaging and transactional systems. In a Process Center network deployment environment, the Remote Messaging topology pattern is often enough to meet processing needs.	Supported by the following single product installations: • IBM Business Process Manager Advanced and Standard configurations	
Remote Messaging and Remote Support	3	This topology pattern separates messaging, Common Event Infrastructure (CEI), application deployment target, and application support functions into distinct clusters. Most businesses can use this topology pattern to support their deployment environments because it is designed for performance and isolation of transactional processing from messaging and other support functions.	Supported by the following single product installations: • IBM Business Process Manager Advanced and Standard configurations	This topology pattern is the default topology pattern for IBM Business Process Manager production environments. This topology pattern is the default topology pattern for the following installations: • IBM Business Process Manager Advanced (including deployment environments) • IBM Business Process Manager Standard
Remote Messaging, Remote Support, and Web	4	This topology pattern defines one cluster for application deployment, one remote cluster for the messaging infrastructure, one remote cluster for supporting applications, and one remote cluster for web application deployment (Business Process Choreographer Explorer, Business Rules Manager, Business Space, Process Portal, and REST API services).	Supported by the following products, or any combination of these products: • IBM Business Process Manager Advanced and Standard configurations • IBM Business Monitor	This topology pattern is the default topology pattern for an IBM Business Monitor installation. For the Standard configuration, choose this pattern only if your topology includes IBM Business Monitor.

Configurable components for each configuration

When you install the various configurations of IBM Business Process Manager, certain components are visible to you during the installation and configuration process. For network deployment, these components can be in one cluster or in multiple clusters.

Table 17 shows the components for each of the different configurations.

Table 17. IBM Business Process Manager components

Component	Adv	ESB	Std	Exp
Process Server	X		X	X
Process Server messaging engine (service integration bus)	X		X	X
Performance Data Warehouse	X		X	X
Performance Data Warehouse messaging engine (service integration bus)	X		X	X
Common database	X	X		
Common event infrastructure (CEI) messaging engine (service integration bus)	X	X		
Service Component Architecture (SCA)	X	X		
SCA application messaging engine (service integration bus)	X	X		
Business Space	X	X	X*	X*
Process Portal	X		X	X
Business Process Choreographer	X			
Business Process Choreographer messaging engine (service integration bus)	X			
Business Process Choreographer Explorer	X			

Note: On IBM BPM Standard and IBM BPM Express the Business Space configuration only supports Process Portal and Business Space spaces that include IBM Business Monitor widgets.

Related concepts:

"Considerations for selecting a topology" on page 46
Selecting an appropriate topology for your deployment environment depends upon several factors.

"Topologies of a network deployment environment" on page 37
A topology is the physical layout of the deployment environment. You can create the topology that best addresses your business needs by choosing one of the patterns provided by IBM or by creating your own customized pattern.

Determining whether to create a standardized or customized network deployment environment

There are two approaches to configuring your network deployment environment after profile creation. You can create a standardized network deployment environment based on IBM-supplied topology patterns, or you can create a customized network deployment environment to meet your unique business processing needs.

Reasons to create a standardized network deployment environment

If the IBM-supplied topology patterns (packaged as templates in IBM Business Process Manager) address all or most of your business processing needs, use the Deployment Environment wizard to create a

standardized network deployment environment. The Deployment Environment wizard generates clusters and servers according to several predefined topology patterns, and configures multiple components across them all at the same time.

You should choose to create a standardized network deployment environment for one or more of the following reasons:

- You do not have a lot of experience using the features and functions of the administrative console required to create and configure servers, server clusters, and IBM Business Process Manager components.
- You want to configure multiple components by using a single wizard in the administration application.
- You want to import a database design file to provide the values for database-related resource definitions.
- You have a predefined Deployment Environment that you can import into the current environment and customize, if necessary.

Reasons to create a customized network deployment environment

If the complexities of your business processing needs are not sufficiently met by any of the IBM-supplied topology patterns, use the features and functions of the administrative console to create a customized network deployment environment.

You might choose to create a customized network deployment environment for one or more of the following reasons:

- You are well-versed in using the administrative console to create deployment environments.
- You understand the concepts and component architecture required in a multi-clustered environment.
- You want to configure any clusters or servers upon which the components will be deployed *before configuring* the IBM Business Process Manager components themselves.

Load balancing and failover with IBM HTTP Server

In a network deployment environment, you can configure IBM HTTP Server as a proxy server for workload balancing and failover purposes. Instead of incoming HTTP requests going directly to an application server, they go to the proxy server, which then distributes the requests across multiple application servers that perform the work.

Tip:

You do not have to use IBM HTTP Server for load balancing, you can use any other type of routing server, for example, WebSphere Application Server proxy server, any other web server, reverse proxy server, or network layer IP sprayer.

Although the specific configuration steps differ depending on your environment, the following general tasks can help you plan for and implement workload balancing and failover with IBM HTTP Server.

1. Review the information in Selecting a front end for your WebSphere Application Server topology to learn more about using a proxy server front end.
2. Implement a web server plugin. Install and configure the plugin as part of the local deployment manager profile. These WebSphere Application Server topics provide more information:
   - Implementing a web server plug-in
   - Installing and configuring web server plug-ins (refer to Scenario 5 in this topic)
3. Configure Secure Sockets Layer (SSL) between the deployment manager for WebSphere Application Server and the IBM HTTP Server administration server. You must configure the Application Server to accept a self-signed certificate from IBM HTTP Server so SSL connections are accepted and

transactions are completed. See Configure SSL between the IBM HTTP Server Administration Server and the deployment manager for more information.

4. Customize the Process Server or Process Center cluster so that the configuration file points to the web server, the Process Server is in online mode, and communication is enabled for HTTP over SSL or HTTP Secure (HTTPs). See Customizing the Process Server or Process Center cluster to work with a web server.

Related concepts:

"Considerations for selecting a topology" on page 46
Selecting an appropriate topology for your deployment environment depends upon several factors.
"Considerations for selecting a topology" on page 46
Selecting an appropriate topology for your deployment environment depends upon several factors.

Planning your database configuration

To plan your database configuration, you need to know which databases must be in place and configured in order to use the software, which components of IBM Business Process Manager you will use and their associated databases, the tasks required to administer the databases, and the security privileges of the database system that you are using.

Databases and your IBM Business Process Manager topology

A database configuration is part of the overall IBM Business Process Manager topology. For configuration activities, you must understand the differences between Process Center and Process Server databases as they relate to topology and runtime processing.

Although Process Center shares the same database schema, there are specific differences in the instance data that is stored. You must have a separate instance of the shared schema for each instance of Process Center and Process Server.

If you use the **Typical profile creation** option, the database design tool automatically generates SQL scripts for a default database configuration.

If you create the stand-alone development profile (**qwps**) during installation, the required databases are configured automatically. You do not need to design the database requirements.

If you create database tables manually, use the database design tool to create the SQL scripts, because the tool ensures that the generated SQL scripts are unique.

Restriction: For Oracle, a database instance is not created as part of the SQL file execution; you must create an instance manually, using the Oracle product documentation.

You can incorporate configuration information for the database into the profile creation process by one of the following methods:
- Referencing a database design file
- Setting database configuration parameters with the Profile Management Tool or the `manageprofiles` command-line utility

Regardless of how you choose to implement your database configuration, you must generate the SQL scripts as part of the profile creation process. You cannot reuse SQL scripts between Process Servers or clusters of Process Servers.

Before they configure the databases, the solution architect and database administrator must collaborate on the database topology to understand the best way to store database tables. For example, will the tables be stored in the same database as the common database? Or will the tables be stored in a separate database as a stand-alone profile? Separate databases might be helpful because they simplify the database

configuration. You might also use separate databases to tune and manage the component databases separately from the common database in a stand-alone server environment.

Process Center database and Process Server database

IBM Business Process Manager Express and IBM Business Process Manager Standard include database configuration patterns, so you can create a database design for each runtime environment. You can use either pattern to create a database configuration for Process Server and Performance Data Warehouse Server components.

IBM Business Process Manager Advanced includes the same database configuration patterns, plus an additional pattern called **bpm.advanced.standalone.dbDesign**. You can use the **bpm.advanced.standalone.dbDesign** pattern as the database schema for the Process Server and Performance Data Warehouse server components in a common database. Use this pattern when you are creating a stand-alone profile that combines the Process Server and Performance Data Warehouse runtime environments. If you use this pattern for a common database, a custom schema value is not specified.

You can also use the `procsrv` and `pctrsrv` database designs with the Deployment Environment wizard. For network deployment environments within the standard or advanced configurations, these patterns are part of the setup for the Process Server or Process Center on a deployment host.

Choosing how and when to configure the common database

You can create the required database tables either before or after configuring IBM Business Process Manager. The important thing to remember is that the databases (including their tables, schemas, and so on) must exist before the IBM Business Process Manager servers try to use them.

You can create the common database before, during, or after you create the IBM Business Process Manager profile.
* Before you configure IBM Business Process Manager:
  – Edit and run the default scripts that come with IBM Business Process Manager. You can use the default scripts to create only the common database.
  – Use the design file that was created using the database design tool (DDT).
* After you configure IBM Business Process Manager:
  – Use the Profile Management Tool to configure IBM Business Process Manager to work with the tables in the database as you create the profile. You can create and configure the database tables during profile creation, or delay creation and configuration until after the profile has been created. Use the Profile Management Tool to generate database scripts that you can use to create and configure the database tables. These generated scripts are ready to use. No editing is required.
  – Use the design file that you created using the database design tool (DDT).

Supported database types

Choosing a database depends on your operating system and on the features that you will use with IBM Business Process Manager.

See Table 18 on page 54 for a list of the databases that are supported with IBM Business Process Manager.

IBM Business Process Manager packages JDBC drivers for DB2, Oracle, and SQL Server. For information about the JDBC drivers (including version and level information), see the web page Detailed hardware and software requirements for IBM Business Process Manager.

Note: You are responsible for providing JDBC driver levels outside of what is packaged with IBM Business Process Manager.

The DB2 Express database is included in the IBM Business Process Manager software, and can be installed and configured automatically when you install IBM Business Process Manager The user must have administrative privileges (root or Administrator) to install DB2 Express.

Important: `Linux` If you are installing DB2 Express as a root user, you must ensure that all kernel requirements are met before the DB2 Express installation begins. See Kernel parameter requirements (Linux) for a list of the kernel requirements. You can locate the current values by parsing the output of the **ipcs -l** command.

Note: Currently, there is a known limitation in DB2 Express installer related to the inclusion of national language (NL) strings in properties passed to it from the IBM Business Process Manager installer. The following values, which are passed to DB2 Express when it is being installed cannot have NL strings in them: `Linux` `Windows`

- `Linux` Instance user name and password: `bpminst`

- `Linux` Fenced user name and password: `bpmfenc`

- `Linux` Administration server (DAS) user name: `bpmadmin`

- `Windows` Administrative user name: `bpmadmin`

Choose passwords that comply with the password policy of your system (for example, Windows 2008).

Each database is represented by a parameter *dbType* which is a character string. The *dbType* parameter is used as a parameter in **manageprofiles** command-line utility. The values of *dbType* for the supported databases are shown in Table 18.

Table 18. Supported database types, their associated dbType values and restrictions

Supported database	dbType value	Restrictions and notes
DB2 Express	DB2_DATASERVER	Used as the default database type for a stand-alone profile.
DB2 Universal	DB2_DATASERVER	

DB2 Data Server	DB2_DATASERVER	Available for download from:
		    9.7 GA level
		    Fixpacks

DB2 for z/OS	DB2UDBOS390	If you are using DB2 for z/OS as your database management system, you must configure the database and database objects by using the **createDB2.sh** script. The installation wizard is not able to create a database of this type. .

Table 18. Supported database types, their associated dbType values and restrictions (continued)

Supported database	dbType value	Restrictions and notes
Microsoft SQL Server	Microsoft SQL Server JDBC 1.2 and 2.0 = MSSQLSERVER_MICROSOFT	Microsoft SQL Server JDBC 3.0 is also supported, though not listed as a separate database type on the Profile Management Tool. If you are using Microsoft SQL Server JDBC 3.0 as your database management system, selecting. a database type of Microsoft SQL Server JDBC 2.0 will support version 3.0 **Note:** The Process Server and Performance Data Warehouse databases cannot be shared in the CommonDB. **Note:** If a locale different from Latin must be specified, then the **createDatabase.sql** script must not be used. A different locale that is case-insensitive must be specified. **Important:** You must configure XA transactions after the database is installed and before you start the server. Failure to configure the XA transactions can result in an error during server start up.
Oracle	ORACLE	The installation wizard is not able to create a database of this type for Oracle. **Note:** IBM BPM requires the national character set to be UTF8 as per the following recommendation by Oracle: . **The maximum column size allowed is 4000 characters when the national character set is UTF8 and 2000 when it is AL16UTF16. The maximum length of an NVARCHAR2 column in bytes is 4000. Both the byte limit and the character limit must be met, so the maximum number of characters that is actually allowed in an NVARCHAR2 column is the number of characters that can be written in 4000 bytes**. For details refer to the following Oracle information: http://www.oracle.com/ technetwork/database/globalization/dmu/ overview/index.html

A second parameter used in file path and file naming conventions is *feature*, which indicates which of the various databases is under consideration. Table 19 lists the databases and the associated *feature* parameter.

Table 19. Databases and their associated feature name.

Database	Feature
Process Server	ProcessServer
Performance Data Warehouse	PerformanceDW
Common database	CommonDB
Enterprise service bus logger mediation database	EsbLoggerMediation

When you install IBM Business Process Manager, database scripts are created in the following locations:
INSTALL_ROOT/dbscripts/*feature*/*dbType*

Where *feature* can be:

- CommonDB
- EsbLoggerMediation
- ProcessServer
- PerformanceDW

The creation of most JDBC providers is performed during profile creation, based upon the database parameters that you provide. However, the Business Process Choreographer JDBC providers may be created later using scripts or the administrative console. If a suitable JDBC provider is located on the server or cluster, the existing JDBC provider is used and the creation of a new one is omitted.

Related concepts:

"JDBC drivers and locations" on page 57
The following tables list the supported JDBC drivers. The first table contains the names and locations of the JDBC drivers that are provided with the product. The second table contains the names of the JDBC drivers that are supported but not provided with the product.

Related information:

⯈ Using a DB2 database to hold custom user registry data

Database naming restrictions

Databases cannot be reused across multiple installations of IBM Business Process Manager. Each installation of IBM Business Process Manager requires exclusive use of its associated databases. You must configure the databases so that they can be uniquely identified.

Depending on the installation path that you select, the databases associated with an installation might be configured with default names. For example, the databases associated with IBM Business Process Manager Advanced on IBM DB2 have the following defaults:

- Process Server - BPMDB
- Performance Data Warehouse - PDWDB

If you have two installations of IBM Business Process Manager that use DB2, you must select, for one of the installations, an installation path that lets you specify the names instead of accepting the default values.

To ensure the uniqueness of the database names, select installation paths that prompt you for the database names.

For example, you are prompted for the database names when you use the Typical installation path. Select the option to use an existing database server instead of the default DB2 Express.

Note: When you use the Profile Management Tool to create a profile after installation, you are prompted for database names, no matter which path in the Profile Management Tool (Typical or Advanced) you choose. The only exception is when you use a database design file for your database configuration. The database design file contains the database names, user name, and password information. Thus, the Profile Management Tool does not prompt you for this information.

In contrast, you are not prompted for database names in the following cases:
- Installation Manager provides an option to create the profile, but assigns default values to the database names.
- You are using the Typical installation path and you choose to install DB2 Express, which is packaged with the installation images. Database names are assigned the default values.

Additional restrictions apply to database naming. These restrictions depend on the database server that you are using.

IBM Business Process Manager Standard installation

For IBM DB2 and Microsoft SQL Server databases, the following restrictions apply:

- The Process Server and Performance Data Warehouse components must be in separate databases.
- The Process Server and Performance Data Warehouse components do not support case-sensitive databases. These databases must be case-insensitive.

For Oracle databases, the Process Server and Performance Data Warehouse components must use a separate schema/user. They can use the same instance.

JDBC drivers and locations

The following tables list the supported JDBC drivers. The first table contains the names and locations of the JDBC drivers that are provided with the product. The second table contains the names of the JDBC drivers that are supported but not provided with the product.

The following supported JDBC drivers are included with the product installation files.

Table 20. Supported JDBC drivers and locations that are provided with the product

Server	Driver description	Driver location	Comments
DB2	IBM DB2 Universal JDBC Driver 3.61.65	*WAS_HOME*/jdbcdrivers/DB2	IBM DB2 Universal JDBC Driver is the default DB2 driver for both distributed and z/OS platforms.
	IBM Data Server Driver for JDBC and SQLJ 4.11.69		
Oracle	Oracle JDBC Driver 11g 11.2.0.1.0	*WAS_HOME*/jdbcdrivers/Oracle	
SQL Server	Microsoft SQL Server JDBC Driver 2.0	*WAS_HOME*/jdbcdrivers/SQL Server	Microsoft SQL Server JDBC Driver 2.0 supports SQL Server 1.2, 2.0, and 3.0.

The following supported JDBC drivers are not included with the product installation files.

Table 21. Supported JDBC drivers that are not provided with the product

Server	Driver description
Oracle	Oracle JDBC Driver 11g 11.1.0.6
SQL Server	Microsoft SQL Server JDBC Driver 1.2 and 3.0

Related concepts:
"Supported database types" on page 53
Choosing a database depends on your operating system and on the features that you will use with IBM Business Process Manager.

Related information:

➡ Detailed hardware and software requirements for IBM Business Process Manager Advanced

➡ Detailed hardware and software requirements for IBM Business Process Manager Standard

➡ Detailed hardware and software requirements for IBM Business Process Manager Express

Non-administrative user considerations

Remember the database details so that you can enter them during the installation.

Tip: The Interactive Installation and Configuration Guide is a tool in this information center that you can use to generate a set of installation and configuration topics customized to your precise installation needs. You can save the generated output, print it, take it with you when you install on another computer, or share it with someone else on your team. Each time you need to install with other options, return to the form and generate a new guide, or use it to see what the installation and configuration process looks when you choose different options.

The considerations described in this topic apply to any install scenario where you choose to install using the **Typical** install option. Profiles are created automatically when you install using the **Typical** option.

Note: Test profiles apply only for use with an IBM BPM Advanced configuration.

To install as a non-administrative user, you have the following choices:

Database privileges

Set database privileges to determine the authority that you must have to create or access your data store tables for each supported database management system.

When you create schemas with the installer, Profile Management Tool, database design tool, or scripts, your user ID must have the authority to create tables. When the tables are created, you must have the authority to select, insert, update, and delete information in the tables.

The following table describes the database privileges that are needed to access the data stores.

Table 22. Database privileges

Database type	Minimum privileges required to create objects in the database	Minimum privileges required to access objects in the database
DB2	The user ID needs CREATETAB authority on the database and CREATETS to create the table space. The user ID also needs CREATEIN and DROPIN privilege on the schema. The user ID needs system privileges CREATEDBA and CREATEDBC. The user ID also needs ALTER, DELETE, INDEX, INSERT, REFERENCES, SELECT, and UPDATE privileges on the created tables.	The user ID needs SELECT, INSERT, UPDATE, and DELETE privileges on the tables. The user ID also needs EXECUTE ON PROCEDURE on stored procedures. Refer to Table 23 on page 59 for detailed DB2 database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.
DB2 for z/OS	The user ID needs CREATETAB authority on the database and CREATETS to create the table space. The user ID also needs CREATEIN and DROPIN privilege on the schema. To create storage groups for the database, the user ID needs CREATESG, CREATEDBA, and CREATEDBC system privileges. The user ID also needs ALTER, DELETE, INDEX, INSERT, REFERENCES, SELECT, and UPDATE privileges on the created tables.	The user ID needs SELECT, INSERT, UPDATE, and DELETE privileges on the tables. The user ID also needs EXECUTE ON PROCEDURE on stored procedures. Refer to Table 24 on page 60 for detailed DB2 for z/OS database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.

Table 22. Database privileges (continued)

Database type	Minimum privileges required to create objects in the database	Minimum privileges required to access objects in the database
Oracle	The user ID needs sufficient privilege to create relational tables and indexes in the data store schema. The database also needs a space quota in the default table space of the owner of that schema.	The user ID needs the SESSION privilege to connect to the database. If the same user ID owns both the data store schema, and the component that is connecting to the database, the user ID has sufficient privilege to manipulate the tables. Otherwise, the user ID needs SELECT, INSERT, UPDATE, ALTER, and DELETE object privileges on the tables that make up the data store, and the DROP ANY TABLE system privilege to enable the use of the TRUNCATE TABLE statement. The user ID also requires the CREATE INDEX privilege. You must create the Oracle database using a UTF-8 character set, which supports the other customer character sets that are supported by IBM Business Process Manager. See Table 25 on page 62 for detailed Oracle database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.
SQL Server	The user ID ideally requires DB OWNER privileges on the data stores used for IBM Business Process Manager.	Configure the SQL Server for SQL Server and Windows authentication so that authentication to be based on an SQL server login ID and password. The user ID must be the owner of the tables, or a member of a group that has sufficient authority to issue TRUNCATE TABLE statements. See Table 26 on page 63 for detailed SQL Server database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.

In the following tables, the installation privileges are the privileges that are required to install and configure the product. The runtime privileges are the database privileges required to run the product.

Table 23 describes additional DB2 database privileges for IBM Business Process Manager components.

Table 23. Detailed DB2 database privileges

Component	Installation privileges	Runtime privileges
Common DB	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, USAGE ON SEQUENCE
Business Space	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE

Table 23. Detailed DB2 database privileges (continued)

Component	Installation privileges	Runtime privileges
Business Process Choreographer	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE USER, CREATE PROCEDURE	SELECT, UPDATE, DELETE, INSERT
Business Process Choreographer Explorer reporting function	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE FUNCTION	SELECT, UPDATE, DELETE, INSERT, and EXECUTE ON FUNCTION privileges on the functions listed in the `createFunctionsSql_Observer.sql` and `createFunctionsJava_Observer.sql` scripts.
Messaging Engines	CREATE TABLE, CREATE INDEXTYPE	SELECT, UPDATE, DELETE, INSERT, DROP ANY TABLE **Note:** Messaging Engines use the TRUNCATE TABLE SQL statement, which may require the DROP ANY TABLE privilege. Refer to Database privileges.
Process Server Performance Data Warehouse	Required to create the database: • CREATEDBA • CREATEDBC Required to populate the database with our schemas and stored procedures: • CREATETAB • CREATEIN • DROPIN Additional required privileges on the created tables: • ALTER • DELETE • INDEX • INSERT • REFERENCES • SELECT • UPDATE	Required privileges on the tables in the Process Server and Performance Data Warehouse databases: • DELETE • INSERT • REFERENCES • SELECT • UPDATE The runtime user must have EXECUTE ON PROCEDURE privileges on the six stored procedures in the `createProcedure_ProcessServer.sql` script. The runtime user requires all of the listed privileges on the Performance Tracking Server database as well. In addition, the user also must be able to create new tables in the Performance Tracking database, requiring the CREATETAB privilege. To read the system metadata tables, the SELECT permission is required on **syscat.tables**, **syscat.views**, **syscat.columns**, **syscat.tabconst**, and **sysibm.sysdummy1**.

Table 24 describes additional DB2 for z/OS database privileges for IBM Business Process Manager components.

Table 24. Detailed DB2 for z/OS database privileges

Component	Installation privileges	Runtime privileges
Common DB	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, USAGE ON SEQUENCE, USAGE

Table 24. Detailed DB2 for z/OS database privileges (continued)

Component	Installation privileges	Runtime privileges
Business Space	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, USAGE ON SEQUENCE
Business Process Choreographer	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE USER, CREATE PROCEDURE	SELECT, UPDATE, DELETE, INSERT
Business Process Choreographer Explorer reporting function	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, INSERT, CREATE TABLESPACE, CREATE FUNCTION	SELECT, UPDATE, DELETE, INSERT, and EXECUTE ON FUNCTION privileges on the functions listed in the `createFunction_SQL_Observer.sql` and `createFunction_Java_Observer.sql` scripts.
Messaging Engines	CREATE TABLE, CREATE INDEXTYPE	SELECT, UPDATE, DELETE, INSERT, DROP ANY TABLE **Note:** Messaging Engines use the TRUNCATE TABLE SQL statement, which may require the DROP ANY TABLE privilege. Refer to Database privileges.
Process Server Performance Data Warehouse	Required to create the database: • CREATESG • CREATEDBA • CREATEDBC Required to populate the database with our schemas and stored procedures: • CREATETS • CREATETAB • CREATEIN • DROPIN Additional required privileges on the created tables: • ALTER • DELETE • INDEX • INSERT • REFERENCES • SELECT • UPDATE	Required privileges on the tables in the Process Server and Performance Data Warehouse databases: • DELETE • INSERT • REFERENCES • SELECT • UPDATE The runtime user must have EXECUTE ON PROCEDURE privileges on the six stored procedures in the `createProcedure_ProcessServer.sql` script. The runtime user requires all of the listed privileges on the Performance Tracking Server database as well. In addition, the user also must be able to create new tables in the Performance Tracking database, requiring the CREATETS and CREATETAB privileges. To read the system metadata tables, the SELECT permission is required on **sysibm.systables**, **sysibm.sysviews**, **sysibm.syscolumns**, **sysibm.syschecks**, **sysibm.sysrels**, **sysibm.systabconst**, **sysibm.systablespace**, and, **sysibm.sysdummy1**.

additional Oracle database privileges for IBM Business Process Manager components.

Important: If you configure all the following components for a single Oracle database, you can create a superset of all the privileges that are specified for each component. If you configure the four components for numerous databases, you can set different privileges for each.

Table 25. Detailed Oracle database privileges

Component	Installation privileges	Runtime privileges
Common DB	CREATE TABLE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE
Business Space	CREATE TABLE, ALTER TABLE, INSERT, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE
Business Process Choreographer	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE USER, CREATE PROCEDURE	SELECT, UPDATE, DELETE, INSERT
Business Process Choreographer Explorer reporting function	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE FUNCTION	SELECT, UPDATE, DELETE, INSERT, and EXECUTE ON FUNCTION privileges on the functions listed in the `createFunctionsSql_Observer.sql` and `createFunctionsJava_Observer.sql` scripts.
Common Event Infrastructure (CEI)	CREATE TABLE, CREATE INDEXTYPE, ALTER TABLE, CREATE VIEW, ALTER SESSION, SELECT, UPDATE, DELETE, INSERT, CREATE TABLESPACE, CREATE PROFILE CREATE ROLE, CREATE PROCEDURE, CREATE TEMPORARY TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE PROCEDURE
Messaging Engines	CREATE TABLE	SELECT, UPDATE, DELETE, INSERT, DROP ANY TABLE **Note:** Messaging Engines use the TRUNCATE TABLE SQL statement, which may require the DROP ANY TABLE privilege. Refer to Database privileges. If you prefer not to give the user this privilege, you can avoid it, at a performance cost, using tuning. Refer to Setting tuning properties.
Process Server	CREATE TABLE, SELECT, INSERT, UPDATE, ALTER LOCK TABLE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE VIEW, DROP VIEW, CREATE PROCEDURE, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, DROP TABLE, DROP VIEW, CREATE SEQUENCE

Table 25. Detailed Oracle database privileges (continued)

Component	Installation privileges	Runtime privileges
Performance Data Warehouse	CREATE TABLE, SELECT, INSERT, UPDATE, ALTER LOCK TABLE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE VIEW, DROP VIEW, CREATE PROCEDURE, CREATE SEQUENCE, CREATE USER, ALTER USER, CREATE TABLESPACE	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, DROP TABLE, DROP VIEW, CREATE SEQUENCE All schemas or users creating or migrating IBM BPM profiles must have access to the **DBMS_LOCK** package. Set the **Execute** permission on the **DBMS_LOCK** package for the Oracle user or schema using the performance database as shown in the following example: `GRANT execute ON DBMS_LOCK TO <schema_name>` In this example, *schema_name* is the user ID that is used for the performance database.

Table 26 describes additional SQL Server database privileges for IBM Business Process Manager components.

The IBM Business Process Manager database user should be assigned to the following three roles:

Note: The database must be created by the database administrator who can then assign these roles to the database user for IBM Business Process Manager.

- db_ddladmin
- db_datawriter
- db_datareader

For information regarding the permissions that are provided by these roles, refer to Microsoft-specific documentation.

The following table describes the permissions required of each component for both install and runtime activities.

Table 26. Detailed SQL Server database privileges

Component	Installation privileges	Runtime privileges
Common DB	CREATE TABLE, ALTER TABLE, INSERT, CREATE USER, ALTER USER	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE
Business Space	CREATE TABLE, ALTER TABLE, INSERT, CREATE USER, ALTER USER	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE
Business Process Choreographer	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE USER, CREATE PROCEDURE	SELECT, UPDATE, DELETE, INSERT
Messaging Engines	CREATE TABLE	SELECT, UPDATE, DELETE, INSERT, DROP ANY TABLE **Note:** Messaging Engines use the TRUNCATE TABLE SQL statement, which may require the DROP ANY TABLE privilege. Refer to Database privileges.

Table 26. Detailed SQL Server database privileges (continued)

Component	Installation privileges	Runtime privileges
Process Server	CREATE TABLE, SELECT, INSERT, UPDATE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE VIEW, DROP VIEW, CREATE PROCEDURE, CREATE USER, ALTER USER	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, DROP TABLE, DROP VIEW
Performance Data Warehouse	CREATE TABLE, SELECT, INSERT, UPDATE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE VIEW, DROP VIEW, CREATE PROCEDURE, CREATE USER, ALTER USER	SELECT, UPDATE, DELETE, INSERT, CREATE VIEW, CREATE PROCEDURE, DROP TABLE, DROP VIEW

Business Process Choreographer Explorer reporting function is not supported on SQL Server.

For more information, see the WebSphere Application Server page in the related reference.

Related reference:

Database privileges in WebSphere Application Server

User ID or schema name privileges

During the installation of IBM Business Process Manager, you can use the default schema name and user ID privileges to install your databases. However, your database design might require separate user ID or schema name privileges.

Review the provided scenarios to determine when and how to configure different schema names and user ID privileges when you install IBM Business Process Manager.

Scenario for a single user ID or schema name privileges

If you chose a default installation for your databases, IBM Business Process Manager requires a minimum of one user ID or schema name that can create tables and to select, insert, update, and delete rows in those tables. You can use the Profile Management Tool or the installer to create your databases.

The following table shows the default database configuration properties when you use DB2 as your database. Other databases have different default configuration properties for database configuration.

Table 27. Scenario: Single user ID or schema

Database tables	Default database name with DB2	User ID or schema name
Common database tables	CMNDB	IBM Business Process Manager provides a user ID during installation.
Messaging tables	MEDB	IBM Business Process Manager provides a schema name during installation.

If your database design has different properties, you might need multiple user ID and schema name privileges. The following scenarios show you how to apply the configuration to achieve your design. Even if your particular design is not in the provided scenarios, you can adapt some of the ideas to implement your particular design.

Scenario 1 for multiple user ID or schema name privileges

In this scenario, you use a schema name that is the same as the user ID privileges, but you do not use the default schema name or default user ID privileges. This single user ID can access all of the database and also create all needed tables. The following examples show scenario 1 privileges:

- Schema name: dog
- Schema name for SCA.SYSTEM ME : dogSYS
- Schema name for SCA.APP ME: dogAPP
- Schema name for Event ME: dogEvent
- User ID to create schemas: dog
- User ID to select, insert, update, and delete schemas: dog

The following table contains information about how to set up the schema name and user ID privileges with DB2 as your database. If you choose a different database, see their documentation for setting up schema names and user ID privileges.

Table 28. Scenario 1: Multiple user ID or schema

Database tables	Database name with DB2	Schema name	User ID to create tables	User ID to select, insert, update, and delete rows
Common database tables	You supply this value in the • Installation wizard • Profile Management Tool • Silent install • Silent profile creation	This schema name is the same as the user ID that is used to select, insert, update, and delete rows.	This value is the same as the user ID that is used to select, insert, update, and delete rows.	You supply this value in the • Installation wizard • Profile Management Tool • Silent install • Silent profile creation

Scenario 2 for multiple user ID or schema name privileges

In this scenario, you use the same schema name and user ID to select, insert, update, and delete schemas. However, you use a different user ID to create the schemas. The following examples show scenario 2 privileges:

- Schema name: snow
- Schema name for SCA.SYSTEM ME: snowSYS
- Schema name for SCA.APP ME: snowAPP
- Schema name for Event ME: snowEvent
- User ID to create the schemas: rock
- User ID to select, insert, update, and delete schemas: snow

The following table contains information about how to set up the schema name and user ID privileges with DB2 as your database. If you choose a different database, see their documentation for setting up schema names and user ID privileges.

Table 29. Scenario 2: Multiple user ID or schema

Database tables	Database name with DB2	Schema name	User ID to create tables	User ID to select, insert, update, and delete rows
Common database tables	You supply this value twice: 1. In table creation scripts 2. During the IBM Business Process Manager configuration with one of the following: • Administrative console • Installation wizard • Profile Management Tool • Silent install • Silent profile creation **Restriction:** If you run the installer first, then you supply the value once because the generated scripts already contain the correct schema name and user ID values.	The table creation scripts need to be modified with the schema name that allows reading and writing rows.	The table creation script needs to be modified with the user ID that allows table creation.	You supply the user ID during profile creation through one of the following: • Installation wizard • Profile Management Tool • Silent install • Silent profile creation

Scenario 3 for multiple user ID or schema name privileges

In this scenario, you use the same user ID to create all schemas. However, each schema has a different user ID to select, insert, update, and delete rows. The following list shows examples of privileges for Scenario 3:

- Schema name: waterCom
- Schema name for common tables: waterCom
- Schema name for SCA.SYSTEM ME: waterSYSME
- Schema name for SCA.APP ME: waterAPPME
- Schema name for Event ME: waterEventME
- Schema name for ESBMessaging tables: waterESB
- User ID to create schemas: milk
- User ID to select, insert, update, and delete schemas:

Schema name	User ID to select, insert, update, and delete schemas
waterCom	waterCom
waterSYSME	waterSYSME
waterAPPME	waterAPPME
waterEventME	waterEventME
waterESB	waterESB

The following table contains information about how to set up the schema name and user ID privileges with DB2 as your database. If you choose a different database, see their documentation for setting up schema names and user ID privileges.

Table 30. Scenario 3: Multiple user ID or schema

Database tables	Database name with DB2	Schema name	User ID to create tables	User ID to select, insert, update, and delete rows
Common database tables	You supply this value in the • Installation wizard • Profile Management Tool • Silent install • Silent profile creation	This schema name is the same as the user ID that is used to select, insert, update, and delete rows.	This value is the same as the user ID that is used to select, insert, update, and delete rows.	You supply the user ID during profile creation through one of the following: • Installation wizard • Profile Management Tool • Silent install • Silent profile creation
Messaging tables	You supply this value with the definition of each messaging engine.	The table creation scripts must include the schema name that is used to select, insert, update, and delete rows.	This value is the same as the user ID that is used to select, insert, update, and delete rows.	You supply this value during the creation of the messaging engine. Select the **Create Table** option during the messaging engine configuration.

Planning your component-specific database configurations

IBM Business Process Manager includes components that require database tables and specific names of the databases where the tables are stored.

Use the information in this section to familiarize yourself with IBM Business Process Manager components that your database administrator must manage, configure, and administer.

To plan your database configuration, you must know the components that you will use. Table 31 lists the IBM Business Process Manager components that require a database table, and the default names of the databases where the tables associated with these components are stored.

Important: You can change these names if you choose, but you must remember to use the names consistently in later configuration steps.

Table 31. Databases that are required by individual components

Server component	Database (default name)	Notes
Process Server	BPMDB	The Process Server tables are used to hold, store, and track the data for the process application repository.
Performance Data Warehouse	PDWDB	
Application scheduler	CMNDB (the common database)	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables either during the startup of the deployment manager or stand-alone server or before you start the deployment manager or stand-alone server.

Table 31. Databases that are required by individual components (continued)

Server component	Database (default name)	Notes
Business Space	CMNDB (the common database)	For stand-alone profiles, you must create the common database before you start IBM Business Process Manager. For other profiles, you must use the administrative console to configure Business Space. Configuring a Business Space database is mandatory for using Business Space powered by WebSphere and Process Portal.Business Space powered by WebSphere provides a common interface for application users to create, manage, and integrate web interfaces across a range of IBM products.
Common Event Infrastructure (CEI)	EVENT (stores events)	CEI database configuration is not supported by the Profile Management Tool or the **manageprofile** command-line utility. Do not create this database for production environments because the performance of persisting events may be impacted. The Common Base Event browser relies on the CEI database. If you want to use the Common Base Event browser to retrieve and view logging, tracing, management, and business events in your business enterprise applications, you must create the CEI database manually.
Enterprise service bus	CMNDB (the common database)	You must configure these tables either during startup of the deployment manager or stand-alone server or before you start the deployment manager or stand-alone server
Mediation	CMNDB (the common database)	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables either during the startup of the deployment manager or stand-alone server or before you start the deployment manager or stand-alone server.
Recovery	CMNDB (the common database)	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables either during the startup of the deployment manager or stand-alone server or before you start the deployment manager or stand-alone server.

Table 31. Databases that are required by individual components (continued)

Server component	Database (default name)	Notes
Relationships	CMNDB (the common database)	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables before or during the startup of the deployment manager or stand-alone server.
Selectors and business rules	CMNDB (the common database)/Repository DB	You must create the common database before you start IBM Business Process Manager. You must configure the CMNDB tables before or during the startup of the deployment manager or stand-alone server.
SIBus	User created	You must configure these tables during the startup of the messaging engine or before you start the messaging engine. You can use a file store with SIBus in a stand-alone environment during profile creation. However, you cannot use a file store with SIBus in a network deployment environment.

Table and schema creation

Depending on your database provider, you need different database tables and schemas for your database in IBM Business Process Manager.

In the administrative console, when you select **Resources** > **JDBC** > **Business Integration Data Sources** and click a data source, you can select the check box for **Create Tables** to create the tables from the data source. If only a database administrator can create database tables, clear the check box, locate the scripts in the message box, and give these scripts to your database administrator to run. If you enable **Create Tables**, various deployment environment functions of each database provider are available, as shown in the following tables. An "X" indicates that the table or schema is created.

Tip: You configure the common database during profile creation.

Table 32. Table creation based on database provider

Database providers	Messaging Engine	Business Process Choreographer	Business Process Choreographer reporting	IBM Process Server	Performance Data Warehouse
DB2	X	X	X	X	X
Oracle	X	X	X	X	X
Microsoft SQL	X	X		X	X

Table 33. Schema creation based on database provider

Database providers	Messaging Engine	Business Process Choreographer	Business Process Choreographer Reporting	IBM Process Server	Performance Data Warehouse
DB2	X	X	X	X	
DB2 for z/OS	X	X	X	X	X

Table 33. Schema creation based on database provider (continued)

Database providers	Messaging Engine	Business Process Choreographer	Business Process Choreographer Reporting	IBM Process Server	Performance Data Warehouse
Oracle	X	X	X	X	

The only way to configure the Common Event Infrastructure database is manually. For more information, see *Configuring the Common Event Infrastructure database*.

Planning to configure the common database

The common database configurations contain information about supported database types, script names and their locations, profile creation configuration actions, installation parameters, types of created tables, and user ID privileges.

The common database acts as a repository for various components. The IBM Business Process Manager common database is used by the following product components:
* Business Space
* Recovery
* Relationship service
* Enterprise Service Bus (ESB) Logger Mediation Primitive

You can create the common database before, during, or after you create the IBM Business Process Manager profile.
* Before you configure IBM Business Process Manager:
    - Edit and run the default scripts that come with IBM Business Process Manager. You can use the default scripts to create only the common database.
    - Use the design file that was created using the database design tool (DDT).
* After you configure IBM Business Process Manager:
    - Use the Profile Management Tool to configure IBM Business Process Manager to work with the tables in the database as you create the profile. You can create and configure the database tables during profile creation, or delay creation and configuration until after the profile has been created. Use the Profile Management Tool to generate database scripts that you can use to create and configure the database tables. These generated scripts are ready to use. No editing is required.
    - Use the design file that you created using the database design tool (DDT).

Supported database types

The common database can use the following database products:

Table 34. Supported database products

Database Types	Considerations
DB2 Express	Used as the default database type for a stand-alone profile.
DB2 Universal	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 Data Server	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.

Table 34. Supported database products (continued)

Database Types	Considerations
DB2 for z/OS v8 DB2 for z/OS v9	**Important:** When creating a profile for a server that uses DB2 for z/OS v9, the server must be able to connect to the DB2 database.Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
Microsoft SQL Server (Microsoft)	
Oracle	You need system database administrator privileges to create the database, tables, and schemas. If you do not have these privileges, you might receive errors when you create or access the tables and schemas.

User ID privileges

The user credentials that you provide in the Profile Management Tool must have the permissions necessary to create table spaces, tables, schemas, indexes, and stored procedures. For the **Create new database** option, the user ID must have the necessary privileges to create a database. If the user who is running the script has the authority to create tables, the script does not require an authentication ID within the script. For more information, see Database privileges and User ID or schema name privileges.

Database Management Service instances

For a network deployment environment, there is one set of common database tables per cell.

Configuration actions during profile creation

You can use one of the following options to install the common database:
- Installer
- Profile Management Tool
- Silent installation
- Scripts

Within each of these options are several more choices.

Installer
> Use the Installer if you are going to create your profiles when you install your software. You can install your database products during installation, but you are limited in the types of database products that you can install. To use a supported database product that is not in Table 35, you must use the Profile Management Tool to create your deployment manager.

Table 35. Installer options

Option	Databases you can use
Typical: stand-alone profile	DB2 Express
Typical: all other profiles	DB2 Express
Customized: stand-alone profile	- DB2 Universal - DB2 Data Server - Oracle
Customized: all other profiles	- DB2 Universal - DB2 Data Server - Oracle

A typical installation uses default values for configuration parameters and you cannot change these defaults. If you choose a customized installation, you can change the defaults for your specific requirements.

Profile Management Tool

Use the Profile Management Tool to create profiles after you install your software. The Profile Management Tool allows you the options of installing your database before, during or after profile creation.

Table 36 lists the databases supported by typical (default) profiles and customized profiles.

Table 36. Profile Management Tool options

Options	Databases you can use
Typical: stand-alone profile	• DB2 DataServer • DB2 Universal • DB2 for z/OS • Microsoft SQL Server • Oracle DB2 for z/OS, Oracle and Microsoft SQL databases must exist so that the Profile Management Tool can configure them.
Typical: all other profiles	• DB2 DataServer • DB2 Universal • DB2 for z/OS • Microsoft SQL Server • Oracle DB2 for z/OS, Oracle and Microsoft SQL databases must exist so that the Profile Management Tool can configure them.
Customized: stand-alone profile	Any of the "Supported database types" on page 70
Customized: all other profiles	Any of the "Supported database types" on page 70

Silent Installations

When you install the product silently, you can specify the common database configuration by editing the template response file.

Scripts

You can use scripts to create your common database before you install IBM Business Process Manager or during profile creation.

If you choose to configure your database manually after profile creation, you must first install IBM Business Process Manager and indicate in the Profile Management Tool that you do not want to run the scripts as part of profile creation. The Profile Management Tool updates the default scripts with the database parameters that you specify, and writes updated scripts out to the *profile_root*/dbscripts/CommonDB/*dbType*/*dbName* directory.

Tip: You can use the Profile Management Tool to change the directory to which updated scripts are written.

The scripts are ready to run, but you can edit them to include any specific requirements. You can then give these scripts to the person who should create your common database. If you try to start IBM Business Process Manager before creating the database, you receive an error message.

When you run the scripts, you also perform the following tasks:

- Create a database, if appropriate (valid only for a local database), depending on your choices in the Database configuration panel in the Profile Management Tool.

  Important: Although you can defer creating the database until the profile creation is complete, you must enter valid information in the Database configuration panel of the Profile Management Tool. This information is used to create the data source for the IBM Business Process Manager.

- Create the data source on the JDBC provider.

Important: If you create the database at the same time as the profile, and if you introduce mistakes in the database parameters, errors occur in the profile. If you delay creating the database, the profile is created without errors, but the generated database scripts contain errors and you must correct them before you can create the database. For custom (managed) nodes of a cell, you must select the same database type as the deployment manager profile. The data source is maintained only at the cell level.

Note: For custom (managed) nodes of a cell, you must select the same database type as the deployment manager profile. The data source is maintained only at the cell level.

SQL scripts

Use SQL scripts to configure your database before or after you create the profile. Tables are created with a deployment manager profile so no SQL scripts are executed while the managed node is created.

You can find SQL scripts for each common database client in the following locations:
- *media_root*/dbscripts on your product media
- *install_root*/dbscripts/CommonDB/*dbType* after you install IBM Business Process Manager

If you choose to defer creation of the database after you create the profile, you can find the updated scripts in the *profile_root*/dbscripts/*feature*/*dbType*/*dbName* directory.

The SQL script naming convention is:
- For a component-specific script: **createTable_*componentName*.sql**, for example **createTable_Recovery.sql**
- For a component-independent script: **createTable.sql**.

The following table shows the script naming convention.

Table 37. Common database script naming convention

Type of script	Script name
Component specific	*scriptName_componentName*.sql
Component independent	*scriptName*.sql

JDBC provider

A new Java Database Connectivity (JDBC) provider is created depending on the database type. The provider is created in the node scope in a stand-alone profile and at the cell level in a network deployment environment. The JDBC provider refers to the **JDBC_DRIVER_PATH** variable to locate local JDBC drivers. The variable is specified at the cell level and each node level points to the correct local path.

Data source name:
- **WPS DataSource**

Data source JNDI name:
* **jdbc/WPSDB**

Restrictions

Several restrictions exist for the database commands that are available during profile creation.

`Create new database` is disabled for the following database types:
* DB2 for z/OS
* Oracle
* Microsoft SQL Server

Tables

The common database scripts create only static tables during profile creation. The following table contains a list of all the tables that are created by different components.

Table 38. Tables created by IBM Business Process Manager components

Component	Table names	Scripts
Relationship	Dynamic table, created at runtime	**createTable_Relationship MetadataTable.sql**
Common database	SchemaVersionInfo	**createTable_CommonDB.sql**
ESB Logger Mediation	MSGLOG	**createTable_ESBLogger Mediation.sql**

All the SQL scripts in the previous table are executed by the `commonDBUtility.ant` file from each component script, such as **configRecovery** > **commonDBUtility** > **execute createTable_Recovery.sql**. When the value **delayConfig=true** is in the response file, the SQL files are created, but they are not run. In this case, you must run the SQL manually after the configuration.

In the WebSphere Enterprise Bus Logger Mediation component, you can configure each message logger primitive to use a different data source and a different database.

Exported scripts

Scripts are created for any option that you selected on the Profile Management Tool panel to configure the common database. The scripts contain only basic creation statements for databases, tables, and indexes. The database administrator must use database native commands to execute these scripts.

The names of the scripts are `configCommonDB.bat` for Windows, and `configCommonDB.sh` for UNIX-based operating systems.

Database scripts are exported to the

`profile_root`/dbscripts/CommonDB/`dbType`/`dbName` directory.

Planning to configure the Common Event Infrastructure database
The Common Event Infrastructure (CEI) database specifications list the types of supported databases, script locations, profile configuration types, and necessary user ID privileges. You can optionally use the CEI database to store events that are captured when it is monitoring IBM Business Process Manager.

The CEI database is an internal device and you do not interact directly with it. You must use the supported CEI programming interfaces for all interactions with the CEI database.

When you run the Profile Management Tool, you do not automatically create the CEI database. If you want to store CEI events, you must create the database manually for a stand-alone profile and for each instance of a CEI server in a network deployment environment.

Planning to configure the messaging engine database

The messaging engine database specifications list supported database type, scripts and their locations, profile creation types, and necessary user ID privileges.

The messaging engine database is used to store operating information. Essential objects that the messaging engine needs for recovery in the event of a failure are also stored.

The default database name for the SCA messaging engine is SCADB. For the other messaging engines, the default database name is MEDB. The default schema name is IBMWSSIB.

Important: Multiple schemas are not supported by all database types. For more information, see your database documentation.

In a stand-alone environment, you can use the administrative console to configure your SCA messaging engine. In a patterned network deployment environment, the messaging engines are configured during deployment environment creation. For a custom network deployment environment, you need to configure the messaging engines manually.

You have control over the messaging engine databases. For example, you can create a database for each messaging engine or you can use a single database for all the messaging engines. Each messaging engine must have either its own database or a schema.

Supported database types

The messaging engine database can use the following database products:

Table 39. Supported database products

Database Types	Considerations
DB2 Express	Used as the default database type for a stand-alone profile.
DB2 Universal	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 Data Server	Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
DB2 for z/OS v8 DB2 for z/OS v9	**Important:** When creating a profile for a server that uses DB2 for z/OS v9, the server must be able to connect to the DB2 database.Used as the database in network deployment configurations. Optionally, can be used as the database in stand-alone server configurations.
Microsoft SQL Server (Microsoft)	
Oracle	You need system database administrator privileges to create the database, tables, and schemas. If you do not have these privileges, you might receive errors when you create or access the tables and schemas.

User ID privileges

The user credentials that you provide in the Profile Management Tool must have the permissions necessary to create table spaces, tables, schemas, indexes, and stored procedures. For the **Create new database** option, the user ID must have the necessary privileges to create a database. If the user who is running the script has the authority to create tables, the script does not require an authentication ID within the script. For more information, see Database privileges and User ID or schema name privileges.

For a network deployment environment, you need all necessary permissions for user privileges specified during configuration from the administrative console.

Important: For DB2 V9.7, grant the appropriate authority to the newly created user, because the user creation process does not automatically grant the user the necessary authority.

Database Management Service (DBMS) instances

Each messaging engine has its own database or schema:
- One is used to host each messaging engine for the Service Component Architecture system bus.
- Another is used to host each messaging engine for the Service Component Architecture application bus.
- Another is used to host each messaging engine for the Common Event Infrastructure bus.

The following list contains the naming conventions for the JDBC data source that the messaging engine uses to interact with the database:
- System bus: *<node><server>*|*<cluster>*-SCA.SYSTEM.*<cell>*.Bus
- Application bus: *<node><server>*|*<cluster>*-SCA.APPLICATION.*<cell>*.Bus
- CEI bus: *<node><server>*|*<cluster>*-CEI.*cellName*.BUS

Configuration actions during profile creation

Network deployment
> No messaging engine databases are created automatically. After the profile is created, you can use the Configure your Network Deployment Environment guided activity to configure a server or a cluster for SCA. To access this guided activity from the administrative console of the deployment manager, expand **Guided Activities** and click **Configure your Network Deployment Environment**.

> You can view the SCA configuration of your server from the **Application servers** > *servername* > **Service Component Architecture** panel of the administrative console.

> The following administrative tasks are performed during profile creation:
> - Remote Destination Location:
>   - configSCAAsyncForServer, configSCAJMSForServer (remoteMELocation is true)
>   - configSCAAsyncForCluster, configSCAJMSForCluster (remoteMELocation is true)
> - Local Destination Location:
>   - configSCAAsyncForServer, configSCAJMSForServer
>   - configSCAAsyncForCluster, configSCAJMSForCluster

> For more information about these tasks, see "configSCAAsyncForCluster command" and "configSCAAsyncForServer command".

> When you perform asynchronous SCA configuration for a server or cluster, a messaging engine is created for the SCA system bus. When you perform the JMS element of the SCA configuration for a server or cluster, a messaging engine is created for the SCA application bus. For both messaging engines, you must create a database or schema.

To configure the Common Event Infrastructure messaging engine, use the `deployEventService` administrative task to configure the event server and the Common Event Infrastructure bus.

SQL scripts

No SQL scripts are created as part of the product. You can use existing base WebSphere Application Server scripts to create database and tables if necessary. To create the MEDB manually before it is configured, use the **Servers** > **Server Types** > **WebSphere application servers** > *servername* > **Service Component Architecture** panel of the administrative console.

JDBC provider

Service Component Architecture
> The JDBC provider is reused when the JDBC provider implementation class has to match with the one chosen in the advanced configuration. If the same database types are used, then the implementation classes usually match. If no matching JDBC provider is found in the `resource.xml` file, then the `jdbc-resource-provider-templates.xml` file in the `templates/system` directory (profiles configuration) is searched for a matching JDBC provider. The provider is matched also against the implementation class.

Common Event Infrastructure
> The JDBC provider creation for messaging engine database is similar to the approach followed in the creation of the CEIDB database.

Data source names
- System bus: : `_(node.server|cluster)-SCA.SYSTEM.cell.Bus/cel/cluster/server/node`
- Application bus: `_(node.server|cluster)-SCA.APPLICATION.cell.Bus/cell/cluster/server/node`
- Common Event Infrastructure: `_(node.server| cluster-CEI.cellName.BUS/cluster/server/node`

Data source JNDI names
- System bus: `jdbc/com.ibm.ws.sib/(node.server|cluster)-SCA.SYSTEM.cell.Bus/cell/cluster/server/node`
- Application bus: `jdbc/com.ibm.ws.sib/(node.server|cluster)-SCA.APPLICATION.cell.Bus/cell/cluster/server/node`
- Common Event Infrastructure: `Jdbc/ com.ibm.ws.sib /(node.server|cluster)-CEI.cellName.BUS/cluster/server/node`

Restrictions

There are no known restrictions.

Tables

For information on the tables, see the topic "Data stores" in the WebSphere Application Server Network Deployment information center.

Exported scripts

You can use the **sibDDLGenerator** script in **WAS_INSTALL_ROOT/bin** to create the SQL scripts for messaging engines database. Use the **sibDDLGenerator** script for creating SQL scripts for use in production environment especially on the DB2 for z/OS platform. For more information, see the "The sibDDLGenerator command".

These scripts contain only basic create **database/tablespace/table** statements. A database administrator might still need to tailor these scripts to meet their database needs, especially on DB2 for z/OS.

Chapter 6. Installing and configuring IBM Business Process Manager Standard

IBM Business Process Manager Standard can be installed and configured on a single server (known as a stand-alone configuration), or you can distribute the components across multiple systems (known as a network deployment configuration).

Roadmap: Installing and configuring IBM Business Process Manager Standard

The IBM Business Process Manager Standard installation and configuration programs accommodate various development and production scenarios. This roadmap guides you through the most common paths for installing and configuring IBM Business Process Manager Standard in a stand-alone or network deployment environment.

Alternatively, you can use the Interactive Installation and Configuration Guide to answer a series of questions about your target environment. The guide generates a set of installation and configuration topics that are customized to your installation needs.

The roadmap provides the most relevant links for each common installation and configuration scenario, grouped by operating system.

View all | View with tabs
- "Linux" on page 1
- "AIX" on page 2
- "Solaris" on page 2
- "Windows" on page 3

Linux

To install IBM Business Process Manager on Linux, follow this roadmap.

Preparing
> Complete all the following tasks: review the hardware and software requirements, prepare the operating system for installation, and ensure that you have installed the database management system.
> - "System requirements" on page 83
> - "Preparing Linux systems for installation" on page 85
> - Chapter 3, "Databases and installation and configuration scenarios," on page 7

Deciding
> Before proceeding with the installation, determine which type of installation you want to perform, typical or custom, and choose the appropriate deployment environment for your installation, stand-alone or network deployment.
> - Choosing the type of installation
> - Choosing a stand-alone or network deployment environment

Installing
> Based on the decisions made earlier, select the installation option that is most appropriate for your deployment environment, and then complete the steps to install the product.
> - "Typical installation and configuration" on page 92

- "Custom installation and configuration" on page 112
  - "Installing IBM Business Process Manager Standard interactively" on page 113
  - "Installing IBM Business Process Manager silently" on page 117

Configuring

No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.

Stand-alone deployment

"Configuring profiles and databases" on page 124

Network deployment

Based on your configuration, choose the database that you want to work with, and follow the steps to configure the profiles and build the network deployment configuration.
- "Configuring profiles and creating a network deployment environment" on page 315
- Creating a network deployment environment

AIX

To install IBM Business Process Manager on AIX, follow this roadmap.

Preparing

Complete all the following tasks: review the hardware and software requirements, prepare the operating system for installation, and ensure that you have installed the database management system.
- "System requirements" on page 83
- "Preparing AIX systems for installation" on page 84
- Chapter 3, "Databases and installation and configuration scenarios," on page 7

Deciding

Before proceeding with the installation, determine which type of installation you want to perform, typical or custom, and choose the appropriate deployment environment for your installation, stand-alone or network deployment.
- Choosing the type of installation
- Choosing a stand-alone or network deployment environment

Installing

Based on the decisions made earlier, select the installation option that is most appropriate for your deployment environment, and then complete the steps to install the product.
- "Typical installation and configuration" on page 438
- "Custom installation and configuration" on page 455
  - "Installing IBM Business Process Manager Standard interactively" on page 455
  - "Installing IBM Business Process Manager silently" on page 457

Configuring

No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.

Stand-alone deployment

"Configuring profiles and databases" on page 463

Network deployment

Based on your configuration, choose the database that you want to work with, and follow the steps to configure the profiles and build the network deployment configuration.
- "Configuring profiles and creating a network deployment environment" on page 652
- Creating a network deployment environment

Solaris

To install IBM Business Process Manager on Solaris, follow this roadmap.

Preparing
> Complete all the following tasks: review the hardware and software requirements, prepare the operating system for installation, and ensure that you have installed the database management system.
> - "System requirements" on page 83
> - "Preparing Solaris systems for installation" on page 87
> - Chapter 3, "Databases and installation and configuration scenarios," on page 7

Deciding
> Before proceeding with the installation, determine which type of installation you want to perform, typical or custom, and choose the appropriate deployment environment for your installation, stand-alone or network deployment.
> - Choosing the type of installation
> - Choosing a stand-alone or network deployment environment

Installing
> Based on the decisions made earlier, select the installation option that is most appropriate for your deployment environment, and then complete the steps to install the product.
> - "Typical installation and configuration" on page 770
> - "Custom installation and configuration" on page 787
>   - "Installing IBM Business Process Manager Standard interactively" on page 787
>   - "Installing IBM Business Process Manager silently" on page 789

Configuring
> No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.
>
> **Stand-alone deployment**
> > "Configuring profiles and databases" on page 795
>
> **Network deployment**
> > Based on your configuration, choose the database that you want to work with, and follow the steps to configure the profiles and build the network deployment configuration.
> > - "Configuring profiles and creating a network deployment environment" on page 988
> > - Creating a network deployment environment

Windows

To install IBM Business Process Manager on Microsoft Windows, follow this roadmap.

Preparing
> Complete all the following tasks: review the hardware and software requirements, prepare the operating system for installation, and ensure that you have installed the database management system.
> - "System requirements" on page 83
> - "Preparing Windows systems for installation" on page 87
> - Chapter 3, "Databases and installation and configuration scenarios," on page 7

Deciding
> No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.

Installing

Based on the decisions made earlier, select the installation option that is most appropriate for your deployment environment, and then complete the steps to install the product.

- "Typical installation and configuration" on page 1110
- "Custom installation and configuration" on page 1132
  - "Installing IBM Business Process Manager Standard interactively" on page 1132
  - "Installing IBM Business Process Manager silently" on page 1137

Configuring

No configuration is required after the completion of a typical installation. Perform the following configuration after a non-typical installation.

Stand-alone deployment

"Configuring profiles and databases" on page 1143

Network deployment

Based on your configuration, choose the database that you want to work with, and follow the steps to configure the profiles and build the network deployment configuration.

- "Configuring profiles and creating a network deployment environment" on page 1342
- Creating a network deployment environment

Preparing to install and configure the software

Before preparing to install and configure the software, create a plan for the deployment environment that you want to create.

Use the information listed in the following table to prepare for installing and configuring IBM Business Process Manager.

Table 40. Preparing for installation and configuration

Task	Where to find information	Result after completing the task
Review hardware and software requirements	Depending on your IBM BPM configuration, visit: • IBM Business Process Manager Advanced system requirements • IBM Business Process Manager Standard system requirements • IBM Business Process Manager Express system requirements	You understand the system requirements necessary to support your IBM Business Process Manager installation.
Prepare your operating system	**AIX** Preparing AIX systems for installation **Linux** Preparing Linux systems for installation **Solaris** Preparing Solaris systems for installation **Windows** Preparing Windows systems for installation	You have prepared the operating system of each workstation to be used.

Table 40. Preparing for installation and configuration (continued)

Task	Where to find information	Result after completing the task
Make sure you have installed your database management system.	Consult your database documentation for information about installing and administering your database management system.	Your database management system is installed. IBM Business Process Manager embeds the DB2 Express database. If you want to use DB2 Express as your database, you can select it as a feature from the installer and it is installed and configured automatically. The user must have administrative privileges (root or Administrator) to install DB2 Express. **Note:** If you already have a version of DB2 installed and you want to install DB2 Express, you must uninstall DB2 before running the IBM Business Process Manager installer. If the installer detects a version of DB2 installed and you have selected to install DB2 Express from the installer, you will receive a warning message and will not be able to install DB2 Express. **Important:** `Linux` If you are installing DB2 Express as a root user, you must ensure that all kernel requirements are met before the DB2 Express installation begins. See Kernel parameter requirements (Linux) for a list of the kernel requirements. You can locate the current values by parsing the output of the **ipcs -l** command. **Important:** You will not be able to properly install and use DB2 Express if the password that is specified does not meet operating system or company restrictions, because an operating system user is created on install.

System requirements

Before you install, ensure that your system meets all system requirements.

For the latest information about platform-specific disk space requirements, supported operating systems, and supported database versions, click one of the following links. You can also find operating system fixes and patches that you must install to have a compliant operating system.

- IBM Business Process Manager Standard system requirements
- IBM Business Process Manager Tools and Add-Ons Requirements

Preparing operating systems for product installation

Before you can install IBM Business Process Manager, you must prepare your operating system. The configuration depends on the type of operating system you are using.

Before preparing the installation environment, complete the following tasks:

- Disable the firewall if you have a firewall running on the system where you plan to install IBM Business Process Manager.
- Ensure that your user login provides access to your DB2 or Oracle database commands.

- Complete additional tasks specific to your operating system.

Attention: While installing IBM Business Process Manager on **Windows Server 2003** or **Windows 7 (English)** and switching the locale to Czech in the IBM Process Portal**Preference -> Interface language** the text displays with corrupt characters on several panels of the IBM Process Designer. The text displays with corrupt characters even if IBM Process Designer is started with the Czech locale.

Tip: To resolve this issue change system settings as follows.
- In **Windows Server 2003**: **Regional and Language Options -> Advanced -> Language for non-Unicode programs -> set to 'Czech'**
- In **Windows 7: Regional and Language Options -> Administrative Tab -> Change system locale... (under 'Language for non-Unicode programs') -> Select 'Czech'**

.

Preparing AIX systems for installation

Before you can install IBM Business Process Manager, you must prepare your AIX® operating system.

Because WebSphere Application Server is a prerequisite of IBM Business Process Manager, you must complete the required preparation steps in the Preparing the operating system for product installation topic in the WebSphere Application Server information center.

Because certain steps are specific to a version of the operating system, all steps might not apply to your environment. If no qualifier is provided for a particular step, complete the step for all versions of the operating system.

Refer to the following technote for additional preparation information for configuring Installation Manager to run on 64-bit AIX systems: https://www-304.ibm.com/support/docview.wss?uid=swg21330190.

Complete the following steps on your AIX system before installing IBM Business Process Manager:
1. Increase the maximum number of open files. The default setting is usually not enough. You can check your current maximum number of open files by using **ulimit -n**. The following example shows the maximum number of open files being increased to 8800, which is large enough for most systems. The ulimit requirement is dynamically calculated at installation time and might need to be larger based on the options you select.
   Before installing, run the following command:
   > **ulimit -n 8800**

   Alternatively, you can use the following steps to edit the resource limits file:
   a. Open `/etc/security/limits`.
   b. Edit or add the **default** section and include this line:
      > **nofiles = 8800**
   c. Save and close the file.
   d. Log off from the operating system and log in again.
2. Set the **umask** value to 022 using the following command:
   > **umask 022**
3. Ensure that you have Mozilla Firefox installed at version 3.5.x.x or higher.
4. Before starting the data movement service, increase the number of processes configured in the AIX operating system to avoid a connection reset error. You can increase the number of processing using a command, or using the AIX interface.
   - Run the command:
     ```
     chdev  -l sys0 -a maxuproc='256'
     ```

- In the AIX interface, enter **smitty**, then select **System Environments > Change / Show Characteristics of Operating System > Number of processes allowed per user(Num.)**.

5. Complete the steps to Tune AIX systems.

6. Ensure all servers involved are set to the same time. Use the same network time protocol for all servers on all cluster nodes, including application, support, and database clusters. A time mismatch will cause erratic behavior, including duplicate system tasks.

Related tasks:

➦ Preparing AIX systems for installation

➦ Tuning AIX systems

Preparing Linux systems for installation

Before you can install IBM Business Process Manager, you must prepare your Linux operating system.

Because WebSphere Application Server is a prerequisite of IBM Business Process Manager, you must complete all the required preparation steps in the Preparing the operating system for product installation topic in the WebSphere Application Server information center.

Ensure that you have Mozilla Firefox installed at version 3.5.x.x or higher.

Because certain steps are specific to a version of the operating system, all steps might not apply to your environment. If no qualifier is provided for a particular step, complete the step for all versions of the operating system. To install Installation Manager on Red Hat Enterprise Linux 6.0 (64-bit), see Unable to install Installation Manager on RHEL 6.0 (64-bit).

Note: Cognos bundles an alternate version of the libfreebl3.so library for Red Hat Enterprise Linux 6.0 (64-bit). Ensure that you preload this system library that is required for other utilities.

Complete the following steps on your Linux system before installing IBM Business Process Manager:

1. If you are planning to install DB2 Express as part of the installation process, ensure that you have administrative (root) privileges. As a root user, you must also ensure that all kernel requirements are met before the DB2 Express installation begins. You can locate the current values by parsing the output of the **ipcs -l** command. To change the values, add the following lines, in the following order, to the `/etc/sysctl.conf` file:

```
kernel.shmmni=4096
kernel.shmmax=4294967296
kernel.shmall=8388608
#kernel.sem=<SEMMS><SEMMNS><SEMOPM><SEMMNI>
kernel.sem=250 256000 32 4096
kernel.msgmni=16384
kernel.msgmax=65536
kernel.msgmnb=65536
```

Reboot the system

2. Increase the allowable stack size, number of open files, and number of processes by adding the following lines to the end of the `/etc/security/limits.conf` file:

```
# - stack - max stack size (KB)
* soft stack 32768
* hard stack 32768
# - nofile - max number of open files
* soft nofile 65536
* hard nofile 65536
# - nproc - max number of processes
* soft nproc 16384
* hard nproc 16384
```

Save and close the file, and log off and log in again. You can check the current maximum number of open files by using **ulimit -n**. The `ulimit` requirement is dynamically calculated at installation time and might need to be larger based on the options you select. For more information about this setting, run **man limits.conf** or see the topic Preparing the operating system for product installation in the WebSphere Application Server information center.

3. Install the following packages for your operating system:

Option	Description
Red Hat Enterprise Linux 5	compat-libstdc++-33-3.2.3-61 compat-db-4.2.52-5.1 libXp-1.0.0-8 rpm-build-4.4.2-37.el5 **64-bit kernel only:** compat-libstdc++-296-2.96-138
Red Hat Enterprise Linux 6	ksh-version.rpm Korn shell See the detailed instructions and list of packages in Unable to install Installation Manager on RHEL 6.0 (64-bit)
SUSE Linux Enterprise Server 9.0	XFree86-libs-32bit-9 glibc-32bit-9 glib-32bit-9 gtk-32bit-9

You can also install a later release of any of these packages if there are new packages as errata. If you have additional packages that are specific to your hardware, install them.

You can use single-line commands to install dependencies (all required packages). The following commands are examples using the default package managers on supported Linux distributions.

- **Red Hat Enterprise Linux 5 (32-bit):**

  `yum install compat-libstdc++-33 compat-db libXp rpm-build  RHEL 5.x`

- **Red Hat Enterprise Linux 5 (64-bit):**

  `yum install compat-libstdc++-33 compat-db libXp rpm-build compat-libstdc++-296`

- **SUSE Linux:**

  `zypper install XFree86-libs-32bit-9 glibc-32bit-9 glib-32bit-9 gtk-32bit-9`

4. Set the `umask` value to 022 using the following command:

   umask 022

5. On Red Hat Enterprise Linux 5 systems, disable SELinux, or set it to a permissive mode.

6. Restart the computer.

7. Complete the steps to Tune Linux systems.

8. Ensure all servers involved are set to the same time. Use the same network time protocol for all servers on all cluster nodes, including application, support, and database clusters. A time mismatch will cause erratic behavior, including duplicate system tasks.

Related tasks:

➦ Preparing Linux systems for installation

➦ Tuning Linux systems

Related reference:

➦ Unable to install Installation Manager on RHEL 6.0 (64-bit)

Preparing Solaris systems for installation

Before you can install IBM Business Process Manager, you must prepare your Solaris operating system.

Because WebSphere Application Server is a prerequisite of IBM Business Process Manager, you must complete the required preparation steps in the Preparing the operating system for product installation topic in the WebSphere Application Server information center.

Because certain steps are specific to a version of the operating system, all steps might not apply to your environment. If no qualifier is provided for a particular step, complete the step for all versions of the operating system.

Complete the following steps on your Solaris systems before installing IBM Business Process Manager:

1. Increase the maximum number of open files. The default setting is usually not enough. You can check your current maximum number of open files by using **ulimit -n**. The following example shows the maximum number of open files being increased to 8800, which is large enough for most systems. The ulimit requirement is dynamically calculated at installation time and might need to be larger based on the options you select.

   Before installing, run the following command:

   > **ulimit -Hn 8800**

   Alternatively, you can use the following steps to edit the resource limits file:

   a. Open /etc/system

   b. Add the following line to the end of the file:

   > **set rlim_fd_max=8800**

   c. Save and close the file.

   d. Log off from the operating system and log in again.

2. Set the umask value to 022 using the following command:

   > **umask 022**

3. Complete the steps to Tune Solaris systems.

4. Ensure all servers involved are set to the same time. Use the same network time protocol for all servers on all cluster nodes, including application, support, and database clusters. A time mismatch will cause erratic behavior, including duplicate system tasks.

Related tasks:

➦ Preparing Solaris systems for installation

➦ Tuning Solaris systems

Preparing Windows systems for installation

Before you can install IBM Business Process Manager, you must prepare your Windows operating system.

If you are planning to use DB2 Express with your IBM Business Process Manager installation, the user account must have administrative privileges (Administrator) on the machine where you will perform the installation.

Because WebSphere Application Server is a prerequisite product for IBM Business Process Manager, you must complete all of the preparation tasks for WebSphere Application Server before installing IBM Business Process Manager.

Complete the following steps on your Windows system before installing IBM Business Process Manager:

1. Confirm that the required ports are available. If you install Lotus Forms Turbo on a Windows system, you need to leave the following ports free: 2809, 2810, 8085, 8880, 8881, 9043, 9402, 9403, 9405, 9406, 9060, 9080, 9100, 50000, and 55000. To check which ports are in use, open a command window and enter the command **netstat -b** to see which executable is using a port.

2. Complete the steps in the Preparing Windows systems for installation topic in the WebSphere Application Server information center.

3. Complete the steps to Tune Windows systems.

4. Ensure all servers involved are set to the same time. Use the same network time protocol for all servers on all cluster nodes, including application, support, and database clusters. A time mismatch will cause erratic behavior, including duplicate system tasks.

Related tasks:

⮕ Preparing Windows systems for installation

⮕ Tuning Windows systems

Databases and installation and configuration scenarios

How databases are configured to work with the software is related to the software you are installing and the scenario you are trying to achieve.

In installation scenarios where you will be using the **Typical** installation option, you must pre-create your database, whether that database resides locally (on the same system on which you are installing IBM Business Process Manager) or remotely (on a separate system). The only scenario where you are not required to pre-create your database is when you are installing the DB2 Express database that is embedded with IBM Business Process Manager. DB2 Express is embedded with IBM Business Process Manager on Windows and on Linux for Intel. The user must have administrative privileges (root or Administrator) to install DB2 Express. If you do not already have DB2 Express installed, it is optionally installed when you run the IBM Business Process Manager installer, and the installer also creates the common and component-specific databases on DB2 Express.

Any scenario where you are not using DB2 Express for your **Typical** install is considered to be a **Typical** installation with an *existing database*, meaning you already have a database installed and you will use the *Existing database panel* of the installer to specify its configuration properties. To use this option, you must ensure that your database has already been created.

You and your database administrator should review the information on configuring databases in the information center prior to installing and configuring the software.

Considerations for HADR setup and configuration

Review the following considerations while you plan to set up and configure DB2 for high availability disaster recovery (HADR).

- "Verify status of databases for takeover" on page 89
- "Configure data sources for HADR" on page 89
- "Set up programmatic transaction retry properties" on page 89
- "Specify user roles for HADR" on page 90
- "Start the messaging engine after the takeover" on page 90
- "Access additional information" on page 90

Verify status of databases for takeover

When a site failure occurs, HADR enables the standby database to take over as the primary database, with full DB2 functionality. Before the takeover occurs, verify the DB2 HADR status of both the primary database and the standby database to see if the takeover is allowed or if an error is returned. Sometimes, the takeover might cause an error or might not be allowed.

For more information, see the TAKEOVER HADR command topic. Review the command parameters and the usage notes to determine whether to perform the takeover.

Configure data sources for HADR

Configure the DB2 data sources for HADR in the IBM Business Manager admin console, as described in the Configuring client reroute for applications that use DB2 databases topic.

Keep in mind the following considerations when you configure the data sources for IBM Business Process Manager products:

- It is recommended to enable the automatic client reroute when setting up DB2 HADR.
- For messaging engine and cell level data sources, the *Alternate server names* and *Alternate port numbers* properties must be configured.
- The alternate port must be the external port for the DB2 server, not the HADR service port that is specified in /etc/services. For example, if the HADR service port DB2_HADR_1, specified in /etc/services, is 55001, and the DB2 server uses the external port 50000, you must specify port 50000 for the data source alternate port in the admin console.

Set up programmatic transaction retry properties

To support programmatic transaction retries, two new properties have been added to the 00static.xml file, with the following values:

```
<transaction-reroute-retries>3</transaction-reroute-retries>
<transaction-reroute-retry-delay-in-millis>10000<transaction-reroute-retry-delay-in-millis>
```

Use the 100Custom.xml configuration file to customize the changes in 00Static.xml if values other than default are required. Complete the following steps:

1. Locate 100Custom.xml configuration file:
   - For a network deployment environment, the file path is *DMGR_profile_root*\config\cells\ *cell_name*\nodes\custom_node_name\servers*server_name*\server_type\config\ 100Custom.xml.
   - For a stand-alone server environment, the file path is *standalone_profile_root*\ config\cells*cell_name*\nodes*standalone_node_name*\servers*server_name*\ server_type\config\100Custom.xml.
2. Edit the 100Custom.xml file. Edit the following section to look like this example:
   ```
   <server merge="mergeChildren">
     <transaction-reroute-retries merge="replace">10</transaction-reroute-retries>
     <transaction-reroute-retry-delay-in-millis merge="replace">3000
   <transaction-reroute-retry-delay-in-millis>
   </server>
   ```
3. Save your changes.

Provide all the client reroute properties for all your data sources.

Specify user roles for HADR

When setting up HADR, specify appropriate user roles per platform to determine who can perform different HADR tasks.

- For Windows, use the DB2 administrative user: `db2admin`
- For Linux, use the DB2 instance user, `db2inst1`, rather than the administrative user, `dasusr1`.

For example, if the DB2 instance user is specified, the `db2inst1` user backs up the primary database, copies the backup image to the standby server, and then restores or starts the standby server using this image. If the administrative user is specified, the `dasusr1` user is the owner of the copied image, which the `db2inst1` user who performs the backup and restore actions cannot access. Because the two users belong to different groups and have different access rights to files, the HADR setup might fail.

Start the messaging engine after the takeover

If the auto restart for the messaging engine is disabled, you must manually start the messaging engine after the database takeover occurs.

When two messaging engine servers exist in the same cluster, with messaging server 1 in an active state and messaging engine server 2 in a joined state, you might not have a running messaging engine server in your environment because of the following sequence of events:

1. The database that the messaging engines use has been taken over.
2. Messaging engine server 1 shut down to prevent data loss.
3. Messaging engine server 2 started all the messaging engines and is working as the active server while the messaging engine server 1 is still down.
4. Another takeover of the database occurred.
5. Messaging engine server 2 shut down to prevent data loss.
6. Both messaging engine servers 1 and 2 are down.

Access additional information

If more information is needed, use the following links.

- If an outage occurs in your DB2 HADR environment, see Detecting and responding to system outages in a high availability solution.
- After the failover occurs, if the DB2 HADR status is not `peer` and if some data loss occurs, configure the DB2 HADR status to `peer` as described in the following topics:
  - Performing an HADR failover operation
  - Reintegrating a database after a takeover operation

Configuring Oracle Data Guard for IBM Business Process Manager

You can configure Oracle Data Guard to be used with IBM Business Process Manager. Oracle Data Guard provides high availability, disaster recovery, and data protection and is used to create, manage, and monitor one or more standby databases so that production Oracle databases can survive disasters and data corruptions.

When IBM Business Process Manager is configured to use Oracle Data Guard, you typically have one production database, which is your primary database, and several standby databases. Then Oracle Data Guard automatically maintains each standby database by transmitting redo data from the primary database and applying the redo data to the standby database. If your production database becomes unavailable because of a planned or an unplanned outage, Oracle Data Guard enables you to switch any standby database to the production role, minimizing the downtime that is associated with the outage.

Oracle Data Guard automatically maintains each standby database by transmitting redo data from the primary database and then applying the redo to the standby database.

A Typical Data Guard Configuration
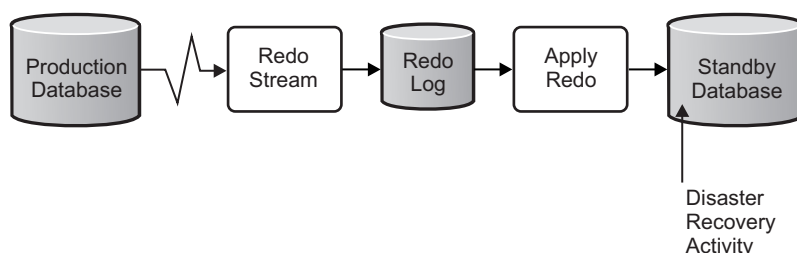
1. Set up the Oracle Data Guard environment.
2. Create a database service from the primary database:

   ```
   Exec DBMS_SERVICE.CREATE_SERVICE('BPM','BPM');
   ```
3. Create a trigger from the primary database by running the following command:

   ```
   CREATE OR REPLACE TRIGGER START_SERVICES AFTER STARTUP ON DATABASE DECLARE ROLE VARCHAR(30);
   BEGIN SELECT DATABASE_ROLE INTO ROLE FROM V$DATABASE; IF ROLE = 'PRIMARY' THEN
   DBMS_SERVICE.START_SERVICE('BPM'); END IF;END
   ```

   Note: When you start a database, your primary database always starts a BPM service. Therefore, your client always connects to the primary database.
4. Restart the primary database or start the following service by running the following command:

   ```
   EXEC DBMS_SERVICE.START_SERVICE('BPM');
   ```
5. Install the IBM Business Process Manager.
6. Create profiles or a deployment environment that is similar to that of an Oracle instance database. While creating the profile, select **Oracle database** and connect to the database service that you created in step 2.

If all your primary and the standby databases are installed on the same server, the databases share the same IP address and Oracle listening port. No further configuration is required.

However, if your primary and standby databases are installed on different servers, they will have different IP addresses and the same Oracle listening port. If your primary and standby databases are on separate servers, you must modify all data sources, after which you will have a JDBC URL that resembles the following URL:

To modify the JDBC URL:

1. Log in to the IBM Business Process Manager administrative console.
2. Go to **Resources** > **JDBC** > **Data sources**.
3. Modify all data sources that connect to the Oracle database with the URLs that resemble the following URL:

   ```
   jdbc:oracle:thin:@(DESCRIPTION=
   (ADDRESS_LIST=
   (ADDRESS=(PROTOCOL=TCP)(HOST=<host A>)(PORT=1521))
   (ADDRESS=(PROTOCOL=TCP)(HOST=<host B>)(PORT=1521))
   (ADDRESS=(PROTOCOL=TCP)(HOST=<host C>)(PORT=1521))
   (LOAD_BALANCE=off)
     (FAILOVER=on)
    )
           (CONNECT_DATA=(SERVICE_NAME=BPM))
    )
   ```

Installing and configuring IBM Business Process Manager Standard

You can install IBM Business Process Manager using typical, custom, or silent installation. You can configure IBM Business Process Manager in a stand-alone or network deployment environment.

Installing and configuring IBM Business Process Manager on Linux

Install IBM Business Process Manager on Linux, and configure a stand-alone or network deployment environment.

Configuring a stand-alone environment on Linux

You can use a typical installation to install the software and configure a stand-alone Process Center or Process Server profile. Or you can choose custom installation and then create profiles, giving you more control over how to configure your software.

Typical installation and configuration:

The Typical installation option is the simplest and quickest method for installing and configuring IBM Business Process Manager.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Related tasks:

"Preparing Linux systems for installation" on page 85
Before you can install IBM Business Process Manager, you must prepare your Linux operating system.

Related reference:

➡ IBM Business Process Manager Standard system requirements

Installing and configuring IBM Business Process Manager with a new DB2 Express database server:

The typical installation can install DB2 Express on Linux and configure the required databases for IBM Business Process Manager. Only select this path if you have administrative privileges (root user) and do not have an existing DB2 database server on the system.

Installing and configuring Process Center with a new DB2 Express database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

The typical installation installs DB2 Express and configures the required databases for IBM Business Process Manager. Only select this path if you have administrative privileges (root user) and do not have an existing DB2 database server on the system.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

```
/home/user/bpm_updates.properties
```

Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

```
ifix.1=/bpmUpdates
fixpack.2=http://test/rep
launchpad.1=/launchpad_updates
fixpack.WAS_REP=/WAS_updates
fixpack.BPM_REP=/BPM_updates
```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:
   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.
   - **Location**: Click **Browse** to change the installation location for Process Center.

   Restriction: Because you are installing DB2 Express, your installation location cannot contain National Language Strings (NLS).

7. Specify the values for the new DB2 database server. The default values are:
   - Instance user name and password: `bpminst` and `Db2pswd!`
   - Fenced user name and password: `bpmfenc` and `bpmfenc1`
   - Administration server (DAS) user name and password: `bpmadmin` and `bpmadmin1`

   Restriction: User names must not contain National Language Strings (NLS).

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.
Related information:

[→] Installation Manager updates

Installing and configuring Process Server with a new DB2 Express database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

The typical installation installs DB2 Express and configures the required databases for IBM Business Process Manager. Only select this path if you have administrative privileges (root user) and do not have an existing DB2 database server on the system.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

       /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

       extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:

   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.

Restriction: Because you are installing DB2 Express, your installation location cannot contain National Language Strings (NLS).

- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
- Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

7. Specify the values for the new DB2 database server. The default values are:
   - Instance user name and password: `bpminst` and `Db2pswd!`
   - Fenced user name and password: `bpmfenc` and `bpmfenc1`
   - Administration server (DAS) user name and password: `bpmadmin` and `bpmadmin1`

   Restriction: User names must not contain National Language Strings (NLS).

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

⬚ Installation Manager updates

Installing and configuring IBM Business Process Manager with a DB2 database server:

You can install IBM Business Process Manager using a DB2 database server. You must make sure the required databases are available before you install.

Creating DB2 databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

Installing and configuring Process Center with a DB2 database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty. The databases must be created with at least a 32K page size.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

       /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

       extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:
   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.
   - **Location**: Click **Browse** to change the installation location for Process Center.

7. Specify the required database information.

Table 41. Required database configuration fields for DB2

Field	Action needed
Hostname	Accept the default value of localhost or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 50000 or enter the correct server port number.
Username	Enter the user name to authenticate with the database. **Restriction:** User names must not contain National Language Strings (NLS).
Password	Enter an encrypted password to authenticate with the database.
Common database name	Enter the name for the Common database.
Process Center database name	Enter the name for the Process Center database.
Performance Data Warehouse database name	Enter the name for the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.
Related information:

 Installation Manager updates

Installing and configuring Process Server with a DB2 database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty. The databases must be created with at least a 32K page size.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or `manageprofiles` command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

       /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

```
ifix.1=/bpmUpdates
fixpack.2=http://test/rep
launchpad.1=/launchpad_updates
fixpack.WAS_REP=/WAS_updates
fixpack.BPM_REP=/BPM_updates
```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:
   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     – Select **Production** if the server is to be used in a production capacity.
     – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     – Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 42. Required database configuration fields for DB2

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of `50000` or enter the correct server port number.
Username	Enter the user name to authenticate with the database. **Restriction:** User names must not contain National Language Strings (NLS).
Password	Enter an encrypted password to authenticate with the database.
Common database name	Enter the name for the Common database.
Process Server database name	Enter the name for the Process Server database.
Performance Data Warehouse database name	Enter the name for the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

⤷ Installation Manager updates

Installing and configuring IBM Business Process Manager with an Oracle database server:

You can install IBM Business Process Manager using an Oracle database server. You must make sure the required databases are available before you install.

Creating Oracle databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

Installing and configuring Process Center with an Oracle database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or `manageprofiles` command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

       /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

       extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:
   - **Hostname**: This field shows the name of your machine.

> **Important:** If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.

- **Location**: Click **Browse** to change the installation location for Process Center.

7. Specify the required database information.

Table 43. Required database configuration fields for Oracle

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1521 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database System Identifier	Enter the correct Process Center database System Identifier.
Common database	For the Common database, enter values for the following parameters: • `User name`: Enter the Common database user name. • `Password`: Enter an encrypted password to authenticate with the Common database.
Process Center database	For the Process Center database, enter values for the following parameters: • `User name`: Enter the Process Center database user name. • `Password`: Enter an encrypted password to authenticate with the Process Center database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name`: Enter the Performance Data Warehouse database user name. • `Password`: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.

Related information:

➡ Installation Manager updates

Installing and configuring Process Server with an Oracle database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or `manageprofiles` command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   ```
   extract_directory/launchpad.sh
   ```

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:

- **Hostname**: This field shows the name of your machine.
- **Location**: Click **Browse** to change the installation location.
- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
- Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.
7. Specify the required database information.

Table 44. Required database configuration fields for Oracle

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1521 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database System Identifier	Enter the correct Process Center database System Identifier.
Common database	For the Common database, enter values for the following parameters: • **User name**: Enter the Common database user name. • **Password**: Enter a password to authenticate with the Common database.

Table 44. Required database configuration fields for Oracle (continued)

Field	Action needed
Process Server database	For the Process Server database, enter values for the following parameters: • **User name**: Enter the Process Server database user name. • **Password**: Enter an encrypted password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name**: Enter the Performance Data Warehouse database user name. • **Password**: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

➡ Installation Manager updates

Installing and configuring IBM Business Process Manager with an SQL Server database server:

You can install IBM Business Process Manager using a Microsoft SQL Server database server. You must make sure the required databases are available before you install.

Creating SQL Server databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.

2. Use the following commands to create the databases for SQL Server:

   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

```
osql -b -S hostname -U db_user_account -P db_user_password
-Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
```

   where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.

   b. To create the Common database:

```
osql -b -S hostname -U db_user_account -P db_user_password
-Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
```

   The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**..

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

   e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

   f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

   On Windows Vista and Windows 7:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

   c. Right-click **Local DTC** and then select **Properties**.

   d. Click the **Security** tab on the **Local DTC Properties** dialog box.

   e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

   f. Click **OK** again to close the Properties dialog box, and then close Component Services.

   g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

   a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

   b. Unzip archive to any folder.

   c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the `x86` folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the `x64` folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Installing and configuring Process Center with an SQL Server database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   `/home/user/bpm_updates.properties`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not

have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.
5. Optionally change the location information:
   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.
   - **Location**: Click **Browse** to change the installation location for Process Center.
6. Specify the required database information.

Table 45. Required database configuration fields for SQL Server

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1433 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database name	Enter the Process Center database name.
Performance Data Warehouse database name	Enter the Performance Data Warehouse database name.
Common database	For the Common database, enter values for the following parameters: • `User name`: Enter the Common database user name. • `Password`: Enter an encrypted password to authenticate with the Common database.
Process Center database	For the Process Center database, enter values for the following parameters: • `User name`: Enter the Process Center database user name. • `Password`: Enter an encrypted password to authenticate with the Process Center database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name`: Enter the Performance Data Warehouse database user name. • `Password`: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

7. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

8. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

9. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.

Related information:

⏭ Installation Manager updates

Installing and configuring Process Server with an SQL Server database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

       /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

       ifix.1=/bpmUpdates
       fixpack.2=http://test/rep
       launchpad.1=/launchpad_updates
       fixpack.WAS_REP=/WAS_updates
       fixpack.BPM_REP=/BPM_updates

2. Start the launchpad. You can run only one launchpad at a time.

       extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:
   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 46. Required database configuration fields for SQL Server

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1433 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Server database name	Enter the Process Server database name.
Performance Data Warehouse database name	Enter the Performance Data Warehouse database name.

Table 46. Required database configuration fields for SQL Server (continued)

Field	Action needed
Common database	For the Common database, enter values for the following parameters: • **User name**: Enter the Common database user name. • **Password**: Enter an encrypted password to authenticate with the Common database.
Process Server database	For the Process Server database, enter values for the following parameters: • **User name**: Enter the Process Server database user name. • **Password**: Enter a password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name**: Enter the Performance Data Warehouse database user name. • **Password**: Enter a password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

➡ Installation Manager updates

Custom installation and configuration:

Use the Custom installation option to install IBM Business Process Manager if you need any installation or configuration options that are not provided by the Typical installation option, if you want to install silently, or if you want to install on an existing installation of WebSphere Application Server.

Related tasks:

"Preparing Linux systems for installation" on page 85
Before you can install IBM Business Process Manager, you must prepare your Linux operating system.

Related reference:

➦ IBM Business Process Manager Standard system requirements

Installing IBM Business Process Manager Standard:

With custom installation, you can select interactive or silent installation. Select interactive installation if you want to install on an existing WebSphere Application Server.

Related tasks:

"Preparing Linux systems for installation" on page 85
Before you can install IBM Business Process Manager, you must prepare your Linux operating system.

Related reference:

➦ IBM Business Process Manager Standard system requirements

Installing IBM Business Process Manager Standard interactively:

You can install the IBM Business Process Manager product package interactively.

Before you install IBM Business Process Manager, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

Related tasks:

"Preparing Linux systems for installation" on page 85
Before you can install IBM Business Process Manager, you must prepare your Linux operating system.

Related reference:

➦ IBM Business Process Manager Standard system requirements

Installing interactively with a new installation of WebSphere Application Server:

Using custom installation, you can install IBM Business Process Manager with a new installation of WebSphere Application Server.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Access the media in one of the following ways, depending on whether you are installing from the product DVD or from images downloaded from Passport Advantage®. You can run only one launchpad at a time.
   - If you are installing from the product DVD, insert the product disk labeled IBM Business Process Manager Standard into the disk drive. Mount the disk drive if necessary. If autorun is enabled on your workstation, the launchpad program automatically opens, and you can proceed to the next step. If autorun is not enabled on your workstation, enter the following command to start the launchpad manually:

     mount_point/launchpad.sh

- If you are installing from images downloaded from Passport Advantage, perform the following steps:
  a. Go to the directory into which you extracted the images.
  b. Enter the following command to start the launchpad:

       extract_directory/launchpad.sh

2. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically.

   If you do not have access to the Internet and want updates to the launchpad to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates. Create the following file:

       /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses a launchpad prefix, followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

3. After starting the launchpad, click **Custom installation** on the Welcome page.

4. Click **Install as administrative user** to install as an administrative user. If you are a root user, you can install as an administrative user. If you are not a root user, or if you want to install to your own user name without root privileges, clear this check box.

5. Click **Install**. When you install IBM Business Process Manager, the required WebSphere Application Server Network Deployment is automatically installed.

6. On the Install Packages page of the Installation Manager, select the **IBM Business Process Manager Standard** package.

7. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

8. On the Licenses page, read the license agreement. If you agree to the terms of the license agreement, click **I accept the terms in the license agreements** and click **Next**.

9. On the Location page, the **Create new package group** option is selected by default. Select a location for the shared resources directory and a location for the Installation Manager and click **Next**. The Install Packages wizard checks your system for operating system prerequisites. If you are at a higher major release of a supported operating system, or if the operating system itself is not on the supported list, you might encounter a warning. You can continue with the installation, but the installation or product operation might not succeed until you apply maintenance.

   If you see a warning, go to the product support web pages and obtain the latest maintenance packages to apply after installation. See the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

10. On the Features page, expand the plus symbol to select the package features that you want to install. Installation Manager automatically enforces any dependencies with other features and shows the updated download size and disk space requirements for the installation.

   a. Optional: To see the dependency relationships between features, select **Show Dependencies**.

   b. Optional: Click a feature to view its brief description under **Details**.

   c. Optional: If you are installing Process Server, you can expand the Process Server feature and change the Process Server use. Select "Production" (the default) to use the server in production, or "Non-production" to use the server only for test, staging, or development. Your selection is recorded in the product tag for inventory purposes.

      Restriction: Do not mix production and non-production servers in the same cell.

   When you are finished selecting features, click **Next**.

11. On the Summary page, review your choices before installing the IBM Business Process Manager Standard package. If you want to change the choices that you made on previous pages, click **Back** and make your changes. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.

12. When the installation process is complete, a message confirms the success of the process.

   a. Optional: Click **View Log File** to open the installation log file for the current session in a new window. You must close the Installation Log window to continue.

   b. Select **Profile Management Tool** if you want to run the Profile Management Tool when you finish or select **None** to complete the installation.

   c. Click **Finish** to close the Installation Manager.

Related information:

➦ Installation Manager updates

Installing interactively with a new DB2 Express database and a new installation of WebSphere Application Server:

The custom installation can install DB2 Express on Linux and configure the required databases for IBM Business Process Manager. Only select this path if you have administrative privileges (root user) and do not have an existing DB2 database server on the system.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Access the media in one of the following ways, depending on whether you are installing from the product DVD or from images downloaded from Passport Advantage. You can run only one launchpad at a time.

   • If you are installing from the product DVD, insert the product disk labeled IBM Business Process Manager Standard into the disk drive. Mount the disk drive if necessary. If autorun is enabled on your workstation, the launchpad program automatically opens, and you can proceed to the next step. If autorun is not enabled on your workstation, enter the following command to start the launchpad manually:

      mount_point/launchpad.sh

   • If you are installing from images downloaded from Passport Advantage, perform the following steps:

      a. Go to the directory into which you extracted the images.

      b. Enter the following command to start the launchpad:

         extract_directory/launchpad.sh

2. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically.

If you do not have access to the Internet and want updates to the launchpad to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates. Create the following file:

```
/home/user/bpm_updates.properties
```

Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

The file uses a launchpad prefix, followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for launchpad upgrades. The locations can be either local directories or URLs. For example:

```
ifix.1=/bpmUpdates
fixpack.2=http://test/rep
launchpad.1=/launchpad_updates
fixpack.WAS_REP=/WAS_updates
fixpack.BPM_REP=/BPM_updates
```

3. After starting the launchpad, click **Custom installation** on the Welcome page.

4. Click **Install as administrative user** to install as an administrative user. If you are a root user, you can install as an administrative user. If you are not a root user, or if you want to install to your own user name without root privileges, clear this check box.

5. Click **Install**. When you install IBM Business Process Manager, the required WebSphere Application Server Network Deployment is automatically installed.

6. On the Install Packages page of the Installation Manager, select the **IBM Business Process Manager Standard** package. Select IBM DB2 Express to install and use an embedded DB2 Express database.

7. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

8. On the Licenses page, read the license agreement. If you agree to the terms of the license agreement, click **I accept the terms in the license agreements** and click **Next**.

9. On the Location page, the **Create new package group** option is selected by default. Select a location for the shared resources directory and a location for the Installation Manager and click **Next**. The Install Packages wizard checks your system for operating system prerequisites. If you are at a higher major release of a supported operating system, or if the operating system itself is not on the supported list, you might encounter a warning. You can continue with the installation, but the installation or product operation might not succeed until you apply maintenance.

   If you see a warning, go to the product support web pages and obtain the latest maintenance packages to apply after installation. See the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

   Attention: Because you are installing DB2 Express, your installation location cannot contain National Language Strings (NLS).

10. On the Features page, expand the plus symbol to select the package features that you want to install. Installation Manager automatically enforces any dependencies with other features and shows the updated download size and disk space requirements for the installation.

   a. Optional: To see the dependency relationships between features, select **Show Dependencies**.

   b. Optional: Click a feature to view its brief description under **Details**.

c. Optional: If you are installing Process Server, you can expand the Process Server feature and change the Process Server use. Select "Production" (the default) to use the server in production, or "Non-production" to use the server only for test, staging, or development. Your selection is recorded in the product tag for inventory purposes.

> **Restriction:** Do not mix production and non-production servers in the same cell.

When you are finished selecting features, click **Next**.

11. Specify the DB2 administrative user names and passwords on the Common Configurations page. The default user names are:
    - Instance user name: `bpminst`.
    - Fenced user name: `bpmfenc`
    - Administration server (DAS) user name: `bpmadmin`

    If the fenced user or administration (DAS) server user name exists, clear the **New User** check box.

    Click **Re-Validate** to confirm that your choices are correct.

    > **Restriction:** User names must not contain National Language Strings (NLS).

12. On the Summary page, review your choices before installing the IBM Business Process Manager Standard package. If you want to change the choices that you made on previous pages, click **Back** and make your changes. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.

13. When the installation process is complete, a message confirms the success of the process.
    a. Optional: Click **View Log File** to open the installation log file for the current session in a new window. You must close the Installation Log window to continue.
    b. Select **Profile Management Tool** if you want to run the Profile Management Tool when you finish or select **None** to complete the installation.
    c. Click **Finish** to close the Installation Manager.

Related information:

⮫ Installation Manager updates

Installing IBM Business Process Manager silently:

You can install the IBM Business Process Manager product package in *silent* installation mode. When you install in silent mode, the user interface is not available.

Before you install IBM Business Process Manager, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

Related tasks:

"Preparing Linux systems for installation" on page 85
Before you can install IBM Business Process Manager, you must prepare your Linux operating system.

Related reference:

⮫ IBM Business Process Manager Standard system requirements

Installing silently using the command line:

You can install IBM Business Process Manager silently using the command line.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Standard installation, you must install them as part of the silent installation. The required base products are:

- Installation Manager
- WebSphere Application Server Network Deployment, including the ejbdeploy and thinclient features.

The silent installation performs the following tasks:

- Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
- Installs the required base products and IBM Business Process Manager Standard.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: Run the following command to generate encrypted passwords using IBM Installation Manager to securely connect to DB2 and the administrative console.

   `extract_directory/IM/tools/imutilsc -silent -nosplash encryptString password_to_encrypt`

2. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.

3. Run the following command:

   ```
   extract_directory/IM/tools/imcl install list_of_product_IDs -acceptLicense
   -installationDirectory location -repositories repository
   -properties key=value,key=value -showVerboseProgress -log logName.log
   ```

   where:

   - *list_of_product_IDs* is a list of the IDs for the products and features that you want to install. You must include the required features. The syntax is *productID,feature,feature*, with multiple products separated by spaces.

Table 47. Product IDs

Product	Product ID	Feature	Description
IBM BPM Standard	com.ibm.bpm.STD.V80	bpmStd.nonprod	Test, staging, or development use. You must specify either this feature or bpmStd.prod.
		bpmStd.prod	Production use. You must specify either this feature or bpmStd.nonprod.

Table 47. Product IDs (continued)

Product	Product ID	Feature	Description
WebSphere Application Server Network Deployment	com.ibm.websphere.ND.v80	core.feature	Required. WebSphere Application Server core content.
		ejbdeploy	Required. Pre-Enterprise JavaBeans (EJB) 3.0 modules.
		thinclient	Required. Stand-alone thin clients and resource adapters.
		embeddablecontainer	Embeddable EJB container.
		samples	Sample applications feature.
		com.ibm.sdk.6_32bit	32-bit software development kit (SDK). You must specify either this feature or com.ibm.sdk.6_64bit.
		com.ibm.sdk.6_64bit	64-bit SDK This feature can only be selected on a 64-bit system. You must specify either this feature or com.ibm.sdk.6_32bit.
Installation Manager	com.ibm.cic.agent	agent_core	Installation Manager core content.
		agent_jre	Installation Manager Java Runtime Environment (JRE).
DB2 Express for Linux 32-bit	com.ibm.ws.DB2EXP97. linuxia32	n/a	DB2 must match the operating system and bitness.
DB2 Express for Linux 64-bit	com.ibm.ws.DB2EXP97. linuxia64	n/a	DB2 must match the operating system and bitness.

- *location* is the path to the directory where you want to install the products.
- *repository* is the path to the repository where you have extracted the files, one of the following directories:

  extract_directory/repository/repos_32bit
  extract_directory/repository/repos_64bit

  For more than one repository, separate the repository locations with commas.
- *key=value* is a list of the keys and values you want to pass to the installation, separated by commas. Do not put spaces between the commas. Create encrypted passwords using the IBM Installation Manager.

Table 48. Keys

Key	Description
user.db2.use.existing	If you are using an existing DB2 setup, add the following line exactly: `user.db2.use.existing=true` If DB2 must be installed, specify the value *false*.
user.bpm.admin.password	Encrypted password for the user name for the administrative console. The decrypted default value is *admin*. This property is needed only if you are creating a profile.
user.db2.port	Port for the DB2 database. The default value is 50000.
user.db2.instance.username	DB2 instance user name. The default value is *bpminst*.
user.db2.instance.password	Encrypted password for the DB2 instance user name.
user.db2.fenced.newuser	The value *true* is for a new user. The value *false* is for an existing user.
user.db2.fenced.username	Fenced user name. The default value is *bpmfenc*.
user.db2.fenced.password	Encrypted password for the fenced user name.
user.db2.das.newuser	The decrypted value *true* is for a new user. The decrypted value *false* is for an existing user.
user.db2.das.username	Administration server (DAS) user name. The default value is *bpmadmin*.
user.db2.das.password	Encrypted password for the administration server user name.

- *logName* is the name of the log file to record messages and results.

  Running this command installs the product with the default features. If you want to install specific features or make other changes, see the reference link for the command-line arguments for imcl.

Installation Manager installs the list of products and writes a log file to the directory that you specified.

The following example installs IBM Business Process Manager Standard, WebSphere Application Server Network Deployment, and DB2 Express on Linux.

```
imcl install com.ibm.bpm.STD.V80,bpmStd.prod com.ibm.websphere.ND.v80,core.feature,ejbdeploy,thinclient,
embeddablecontainer,samples,com.ibm.sdk.6_32bit com.ibm.ws.DB2EXP97.linuxia32 -acceptLicense
-installationDirectory /usr/IBM/BPM80 -repositories /usr/tmp/BPM/repository
-properties user.db2.instance.username=bpmadmin,user.db2.instance.password=Vvrs88V/a9BUdxwodz0nUg==
-showVerboseProgress -log silentinstall.log
```

Define a stand-alone server or deployment manager profile in the Profile Management Tool or using the **manageprofiles** command-line utility. Only profiles created with the Profile Management Tool or **manageprofiles** can be used in production.

Related reference:

[→] Command-line arguments for imcl

[→] IBM Business Process Manager Standard system requirements

Related information:

[→] IBM WebSphere Application Server Information Center

Installing silently using a response file:

You can install IBM Business Process Manager Standard silently by creating a response file and then running a command to use that response file to install the product.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Standard installation, you must install them as part of the silent installation. The required base products are:
* Installation Manager
* WebSphere Application Server Network Deployment, including the ejbdeploy and thinclient features.

The silent installation performs the following tasks:
* Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
* Installs the required base products and IBM Business Process Manager Standard.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: Run the following command to generate encrypted passwords using IBM Installation Manager to securely connect to DB2 and the administrative console.

   `extract_directory/IM/tools/imutilsc -silent -nosplash encryptString password_to_encrypt`

2. Create the response file that will install the required base products and IBM Business Process Manager Standard. Copy the sample response file from the following directory to create your own response file:

   `extract_directory/responsefiles/BPM/template_response.xml`

3. Modify the parameters as directed in the text of the response file template to create your response file.

   Make the following changes:
   * Set your repository location. Choose the appropriate 32-bit or 64-bit repository, and comment out the one that you are not using. If you are not running directly from the `extract_directory/responsefiles/BPM/` directory, point to the location of your installation repository. The repository can be local or remote. If you are running from the DVD, copy the response file from the DVD and point it back at the repository on the DVD.
   * Set the replacement variables in the response file as follows:
     – ${INSTALL_LOCATION_IM} - The location where IBM Installation Manager is already installed or will be installed.
     – ${LOCATION_ECLIPSE_CACHE} - The location of the Eclipse cache. This location must be set only if the location has not already been defined. Comment out this line if the location has already been set.
     – ${INSTALL_LOCATION} - The location where you want to install the product.
     – ${FEATURE_LIST} - The list of features for the product. This list must be replaced with the list of features that you want installed. Follow the instructions included in the `template_response.xml` file.

       Tip: You must specify either the production or the non-production feature, but not both.

- If you are installing DB2 Express, follow the instructions in the `template_response.xml` file for providing the necessary user IDs and passwords. Use the instructions in step 1 for generating the encrypted passwords to include.

4. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.

5. Run the following command:

   Root user:

   ```
   extract_directory/IM/installc -acceptLicense input
   extract_directory/responsefiles/BPM/template_response.xml
   -log preferred_log_location/silent_install.log
   ```

   Nonroot user:

   ```
   extract_directory/IM/userinstc -acceptLicense input
   extract_directory/responsefiles/BPM/template_response.xml
   -log preferred_log_location/silent_install.log
   ```

Installation Manager installs any required prerequisites and IBM Business Process Manager Standard, and writes a log file to the directory you specified.

Define a stand-alone server or deployment manager profile in the Profile Management Tool or using the **manageprofiles** command-line utility. Only profiles created with the Profile Management Tool or **manageprofiles** can be used in production.

Related tasks:

➡ Installing silently by using Installation Manager

➡ Recording a response file with Installation Manager

Related reference:

➡ IBM Business Process Manager Standard system requirements

Granting write permission of files and directories to nonroot users for profile creation or augmentation:

If you are not the user who installed the product, you must have write permission to selected directories within the IBM Business Process Manager installation. The product installer can grant this permission or create a group with permission to create or augment profiles.

The product installer (who can be a root or nonroot user) can grant write permission to the appropriate IBM Business Process Manager files and directories to nonroot users. The nonroot users can then create profiles. Alternatively, the product installer can create a group for users who are authorized to create profiles or give individual users the authority to create profiles.

Nonroot users create their own profiles to manage their own environments. Typically, they manage environments for development purposes.

Nonroot users must store their profiles in their private directory structure, not in the *install_root*/profiles directory of the product.

Restrictions:

- IBM Business Process Manager does not support changing ownership of existing profiles from the product installer to nonroot users. A nonroot user cannot augment profiles owned by another user.
- Mechanisms within the Profile Management Tool that suggest unique names and port values are disabled for nonroot users. The nonroot user must change the default field values in the Profile Management Tool for the profile name, node name, cell name, and port assignments. The product

installer can assign nonroot users a range of values for each of the fields, and assign responsibility to the users for adhering to their assigned value ranges and for maintaining the integrity of their own definitions.

If you already created at least one profile, certain directories and files were created. You can skip the steps in this topic that create these directories and files. If no profile was previously created, you must complete the steps to create the required directories and files.

The following example task shows how to create a group that is authorized to create profiles. The terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager. The installer can perform the following steps to create the profilers group and give the group appropriate permissions to create a profile.

1. Log on to the IBM Business Process Manager system as the product installer. The product installer can be a root or nonroot user.
2. Using operating system commands, perform the following steps:
   a. Create a group named **profilers**, which will contain all users who can create profiles.
   b. Create a user named **user1**, who can create profiles.
   c. Add users **product_installer** and **user1** to the **profilers** group.
3. Log off and log back on as the installer to pick up the new group.
4. If no profile exists, create the following directories as the installer:
   - Create the *install_root*/**logs/manageprofiles** directory:

     ```
     mkdir install_root/logs/manageprofiles
     ```
   - Create the *install_root*/**properties/fsdb** directory:

     ```
     mkdir install_root/properties/fsdb
     ```
5. If no profile exists, create the profileRegistry.xml file as the installer. For this example, the file path is:

   ```
    install_root/properties/profileRegistry.xml
   ```

   Add the following information to the profileRegistry.xml file. The file must be encoded as UTF-8.

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <profiles/>
   ```
6. As the product installer, use operating system tools to change directory and file permissions. The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **/opt/IBM/WebSphere/AppServer**.

```
export WASHOME=/opt/IBM/WebSphere/AppServer
echo $WASHOME
echo "Performing chggrp/chmod per WAS directions..."
chgrp profilers $WASHOME/logs/manageprofiles
chmod g+wr  $WASHOME/logs/manageprofiles
chgrp profilers $WASHOME/properties
chmod g+wr  $WASHOME/properties
chgrp profilers $WASHOME/properties/fsdb
chmod g+wr  $WASHOME/properties/fsdb
chgrp profilers $WASHOME/properties/profileRegistry.xml
chmod g+wr  $WASHOME/properties/profileRegistry.xml
chgrp -R profilers $WASHOME/profileTemplates
```

   Issue the following additional commands:

```
chgrp profilers $WASHOME/properties/Profiles.menu
chmod  g+wr $WASHOME/properties/Profiles.menu
```

   You might have to change the permissions on additional files if the nonroot user encounters permission errors. For example, if the product installer authorizes a nonroot user to delete a profile, then the product installer might have to delete the following file:

```
install_root/properties/profileRegistry.xml_LOCK
```

Give write access to the nonroot user for the file to authorize the user to delete the file. If the nonroot
user still cannot delete the profile, then the product installer can delete the profile.

The installer created the **profilers** group and gave the group the correct permissions to the directories
and files required for a nonroot user to create profiles.

The nonroot user that belongs to the **profilers** group can create profiles in a directory that the nonroot
user owns and to which the nonroot user has write permission. However, the nonroot user cannot create
profiles in the installation root directory of the product.

The root user and the nonroot user can use the same tasks to manage profiles.

Configuring profiles and databases:

After you install the product, if you did not use typical installation, you must create or augment one or
more profiles to define the runtime environment. Before starting a profile, you must have configured the
databases that are to be used with the profile.

Configuring a stand-alone environment with a DB2 database server on Linux:

You can configure a stand-alone environment for IBM Business Process Manager using a DB2 database
server.

Creating DB2 databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse
database, and Common database. The Common database contains Business Space and other components.
You must create the databases before network deployment.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance
Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be
configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the
appropriate values):
```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

If you plan to use DB2 Universal Database™, as part of preparing your database server:

- You must run the **db2profile** script to set the required DB2 environment that is used to invoke the
  DB2 commands during profile creation. Add the **db2profile** script to the /etc/profile file. Run

  ```
  vi /etc/profile
  ```

  and add the following lines:
  ```
  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

  After adding the db2profile script to the /etc/profile directory, you must run the **db2profile** script
  to set the DB2 environment.

- You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using db2inst1 as the user ID, add the root user to the /etc/group administrative groups. Run

  `vi /etc/group`

  and update the following lines:
  ```
  dasadm:|;101:dasusr1,db2inst1,root
  db2iadm:|:102;root
  db2fadm:|:103;db2fenc1,root
  ```

If the procedure is not followed, you might see the following exceptions when creating or augmenting a profile.

- When the **db2profile** script is not run:
  ```
  /opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
  java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
  wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
  ```
- When the DB2 database manager is not running:
  ```
  SQL1032N No start database manager command was issued. SQLSTATE=57019
  ```
- When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:
  ```
  SQL1092N "ROOT" does not have the authority to perform the requested command.
  ```

Creating database design files for DB2:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for stand-alone profiles with DB2:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]       WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database User name[default=] :
Schema name[default=] :
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server host[default=] :
      Database server port[default=50000] :
      Data source user name[default=] :
      Data source password[default=] :
      DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   --------------------------------------------------------------------------------

   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   ```

```
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer : [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
(6)[SibME]      WBI_BPC_ME :  [status = complete]
(7)[SibME]      WBI_CEI_ME :  [status = complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.standalone**, after you configure the master component, all database components are listed as complete.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer]  BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = complete]
(3)[SibMe]      BPM_PerformanceDW_ME :  [status = complete]
(4)[SibMe]      BPM_ProcessServer_ME :  [status = complete]
(5)[save and exit]

Please enter the number for the database component :5

[status] bpm.standard.standalone is complete with 0 remaining item(s):
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.standalone is complete with 0 remaining item(s):

Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with DB2 in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   ```

```
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=BPMDB] :
   Database User name[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   Regular pagesize[default=32k] :
   Regular TableSpace[default=TWPSSPACE] :
   Temporary pagesize[default=32k] :
   Temporary TableSpace[default=TWPSTEMPSPACE] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the data source properties section.
   Database server host[default=] :
   Database server port[default=50000] :
   Data source user name[default=] :
   Data source password[default=] :
   DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   ```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

   ```
   Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
   ```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

   ```
   generate database scripts? (y/n) [default=y] :
   ```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-ProcessServer for BPM_ProcessServer

    [info] thanks, quitting now ...
    ```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-distributed-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with a DB2 database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your DB2 database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

If you plan to configure the databases on a remote server, you must have created the databases before beginning to create or augment the profile. You can create databases on the local server or use existing databases on a remote server.

If you plan to use DB2 Universal Database, as part of preparing your database server:
- You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands during profile creation. Add the **db2profile** script to the /etc/profile file. Run

  ```
  vi /etc/profile
  ```

  and add the following lines:
  ```
  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

After adding the db2profile script to the /etc/profile directory, you must run the **db2profile** script to set the DB2 environment.

- You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using db2inst1 as the user ID, add the root user to the /etc/group administrative groups. Run

  `vi /etc/group`

  and update the following lines:

  ```
  dasadm:|;101:dasusr1,db2inst1,root
  db2iadm:|:102;root
  db2fadm:|:103;db2fenc1,root
  ```

If the procedure is not followed, you might see the following exceptions when creating or augmenting a profile.

- When the **db2profile** script is not run:

  ```
  /opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
  java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
  wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
  ```

- When the DB2 database manager is not running:

  `SQL1032N No start database manager command was issued. SQLSTATE=57019`

- When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:

  `SQL1092N "ROOT" does not have the authority to perform the requested command.`

Creating Process Center stand-alone profiles with a DB2 database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.

     - Start the tool from the First steps console.
     - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.

- Run the command *install_root*/bin/ProfileManagement/pmt.sh.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower® signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **DB2**.

    b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

e. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 49. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in `${WAS_INSTALL_ROOT}/db2/java`.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

• If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the `bootstrapProcessServerData` command.

• Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with a DB2 database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
   - Run the command `install_root`/bin/ProfileManagement/pmt.sh.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12`

file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.

    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    - Environment **Type**: Select how the Process Server is used:

        – Select **Production** if the server is to be used in a production capacity.

- Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
- Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

16. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

17. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **DB2**.
    b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.
    c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.
    d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the

database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

    e. Click **Next**.

18. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 50. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in `${WAS_INSTALL_ROOT}/db2/java`.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

19. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

20. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_StandAlone.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/default.procctr
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with a DB2 database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

   1. Use one of the following methods to start the Profile Management Tool.
      - Start the tool from the First steps console.
      - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > `Profile Management Tool`.
      - Run the command `install_root`/bin/ProfileManagement/pmt.sh.
   2. Shut down any servers associated with a profile you plan to augment.
   3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
   4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
   5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
   6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

      The **Typical** option augments a profile with default configuration settings.

      The **Advanced** option lets you specify your own configuration values for a profile.

      Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
      - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
      - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
      - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
   7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

      Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **DB2**.

   b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

   c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   e. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 51. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in `${WAS_INSTALL_ROOT}/db2/java`.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

11. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with a DB2 database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   - Run the command *install_root*/bin/ProfileManagement/pmt.sh.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

   If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.
9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.

b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   > **Important:** If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **DB2**.

    b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

    c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

    d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

    e. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 52. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in `${WAS_INSTALL_ROOT}/db2/java`.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

   For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

12. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.

- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring DB2 databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/ProcessServer/DB2/ at profile creation time.

2. Connect to your database.

Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.

For example, the following command will connect to the database with the default user ID:

```
db2 connect to databaseName
```

If you log in as **BPMUSER/DB2ADMIN** to the operating system and the datasource for the Process Server database is configured to use **DBUSER** to authenticate, use:

```
db2 connect to databaseName USER DBUSER USING password
```

3. Create the tables for Process Server.

From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

4. Create the table procedures for Process Server.

From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

Important: Use **GO** as a delimiting character when executing the stored procedure. For example:

```
db2 -tdGO -vf createProcedure_ProcessServer.sql
```

5. Reset the connection. For example:

```
db2 connect reset
```

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/PerformanceDW/DB2/ at profile creation time.

2. Connect to your database. For example, run **db2 connect to** *databaseName*.

Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **db2admin**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **db2admin** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.

3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:

- Created or augmented a stand-alone profile.

1. Go to the directory containing the `configBusinessSpaceDB.sh` script. The default directory is `install_root/profile/dbscripts/BusinessSpace/node_name_server_name/DB2/CMNDB`.

2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.sh

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the `98database.xml` file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the `Profile_name/config` directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   `install_root/profiles/ProcCtr01/bin`

Run the bootstrap utility using the following syntax:

- **bootstrapProcessServerData.sh [-dbJDBCClasspath *classpath*]**

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is `WAS_INSTALL_ROOT/jdbcdrivers`.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:
bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:
bootstrapProcessServerData -dbJDBCClasspath /DB2/java

Configuring a stand-alone environment with a DB2 for z/OS database server on Linux:

You can configure a stand-alone environment for IBM Business Process Manager using a DB2 Universal Database for z/OS database server.

Creating database design files and database scripts (Linux stand-alone):

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for stand-alone profiles with DB2 for z/OS:

Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   ```

```
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type *y* and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB. Then press Enter. If you have not yet

created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Data source user name[default=] :
Database schema name (SQLID)[default=] :
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool for indexes[default=BP2] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
```

```
      Database server port[default=] :
      Data source user name[default=] :
      Data source password[default=] :
      DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
      through jdbcDriver Type 4)[default=] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

---------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. For any database components that are listed as a parent to another component, configure the parent before the other components because the information provided will be used as default settings for the database component listing the parent. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

Note: For DB2 for z/OS, you must configure each of the remaining components. The following guidelines apply:

• Ensure that you specify the appropriate schema name for each of the remaining database components. Typically, the Process Server, Performance Data Warehouse, and messaging engine components require unique schema names; the remaining components can be assigned the same schema name. You might also be prompted for other values that are unique to the type of component being configured; for example, a prefix for table space names or a value for VSAM catalog names (VCAT).

- If you intend to use a single database for all the system integration bus messaging engines, specify unique prefixes for their table space names because these prefixes will be used to keep the table space name of each messaging engine unique within the database.

- As you configure each component, verify that the values inherited from the master component are appropriate, and amend as required. For example, if you are planning to use more than one database, you might want to amend the database name to reflect the planned distribution of database objects across the DB2 for z/OS subsystem.

- When configuring the Process Server component (**BPM_ProcessServer**), you are asked to specify whether the database is for a Process Center or Process Server:

  ```
  [info] Please pick one of the following [Is this database for a Process Center?(s)] :

  (1)false
  (2)true
  ```

  If you want to create a Process Center profile or cluster in a network deployment environment, you must choose the **true** option. If you set the option to **false**, you will not be able to access the Process Center console.

  If the database is for a Process Server, you must choose the **false** option.

If you selected **bpm.advanced.standalone**, after you configure the master component, you must manually configure the **BPM_PerformanceDW** and **BPM_ProcessServer** components. Also edit the configuration values of the remaining components to ensure that the configuration is appropriate for each of the databases you want to create.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]       WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :12

[status] bpm.advanced.standalone.topology is not complete with 6 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'catalog' for VCAT is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 4 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.
[ 5 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 6 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'catalog' for VCAT is empty.
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in

your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. To generate the database scripts for each component in the directory that you specified earlier, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories. Each of the directories also contains a **createDB2.sh** script, which you can later run together with the database scripts to create the database objects.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files and database scripts for a specific component with DB2 for z/OS in a stand-alone environment:

You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.

- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

You are prompted to choose a component, as shown in the following example:

```
[info] Please pick one of the following [component(s)] :

(1)bpc
(2)bpcreporting
(3)bpm_performancedw
(4)bpm_processserver
(5)bspace
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=BPMDB] :
   Data source user name[default=] :
   Database schema name (SQLID)[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   Bufferpool of 4K size for tables[default=BP1] :
   Bufferpool of 4K size for LOB data[default=BP3] :
   Bufferpool of 8K size for tables[default=BP8K1] :
   Bufferpool of 16K size for tables[default=BP16K1] :
   Bufferpool of 32K size for tables[default=BP32K1] :
   Storage group name[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
   (2)DB2 Universal JDBC Driver Provider on local z/OS
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the data source properties section.
   Database Location on z/OS system[default=] :
   Database server host[default=] :
   Database server port[default=] :
   Data source user name[default=] :
   Data source password[default=] :
   DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
   through jdbcDriver Type 4)[default=] :
   ```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

   ```
   Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
   ```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

   ```
   generate database scripts? (y/n) [default=y] :
   ```

10. To generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/ProcessServer for BPM_ProcessServer
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Related tasks:

"Creating the messaging engine data stores" on page 191
If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Generating scripts for creating database objects in DB2 for z/OS:

From an installation of IBM Business Process Manager, you can generate database scripts for creating IBM Business Process Manager database objects in a DB2 for z/OS database subsystem. You can use the database design tool to generate the scripts.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Prepare the following information, which provides input to the database scripts that you plan to generate:

- Information about how IBM Business Process Manager and its components are installed.
- Information about the database configuration that you are designing for the DB2 for z/OS subsystem. This information can be supplied by the database administrator or solution architect, and can include details about the required parameters and properties; for example:
  - Database server details
  - Data source details
  - Location of the JDBC driver on the system where the server profile will be created
  - User ID and password for authenticating to the database
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

To generate the database scripts for creating your database objects, you can run the database design tool in silent mode with the **-g** command-line parameter. In this mode, the tool requires input from a database design file that defines the configuration for your DB2 for z/OS database. The database design file must already exist before you generate the database scripts. You can generate the database design file by running the database design tool in interactive mode, or by using a configuration planning spreadsheet:

- You can run the database design tool in interactive mode to generate a database design file. Follow the prompts in the tool to define a DB2 for z/OS database configuration for your stand-alone or network deployment topology.
- The configuration planning spreadsheet is a supplementary artifact that can be downloaded from the IBM Support Portal. The spreadsheet is primarily intended for use with IBM Business Process Manager for z/OS, but can be tailored for use with IBM Business Process Manager on Linux on System z®. The configuration planning spreadsheet consists of a number of worksheets that use color coding and comments to assist with data entry, and to help you establish naming conventions. The spreadsheet

also includes macros that you can use to generate a database design file, among other files. Before using the spreadsheet, run the database design tool in interactive mode to become familiar with the required configuration options for each of the components.

You can download the Microsoft Excel spreadsheet from Techdoc WP102075. The data that you require to complete the spreadsheet can span multiple roles, such as systems programmer, product administrator, and database administrator. Therefore, it is advisable to review the spreadsheet in detail and then work with the relevant personnel to establish naming conventions and to complete the entries. After completing the entries, use the **Save** button on the DataBase Design File worksheet to generate the database design file.

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.

- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. If necessary, copy the database design file, which defines your DB2 for z/OS configuration, to the workstation where IBM Business Process Manager is installed, to make the file available for use with the **DbDesignGenerator** command.

2. From the command line, change to the IBM Business Process Manager directory where the **DbDesignGenerator** command is stored:

       cd /install_root/util/dbUtils

   For example: cd /opt/IBM/WebSphere/AppServer/util/dbUtils

3. Run the **DbDesignGenerator** command using the following syntax:

       DbDesignGenerator.sh -g db_design_file

   where *db_design_file* is the fully qualified name of the database design file. For example:

       DbDesignGenerator.sh -g /tmp/DB2-zOS/W8CELL.nd.dbDesign

4. Review the information that is displayed on the screen, checking that no error messages are displayed. For each database component, the database design tool writes information messages to the screen to indicate that the scripts were generated in the directory specified in the database design file. For example, for the Common database component, you see information similar to the following example:

       [info] The script(s) have been generated in
       C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB

   After the last set of scripts is generated, you see information similar to the following example:

       [info] thanks, quitting now ...

A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

Tip: In the database design file, the directories for the SQL scripts are defined by the *ddl_outDir* variable in each component section. If you want to generate the SQL scripts to a set of different directories, a quick way to do this is to manually update the values of the *ddl_outDir* variables. Then save the database design file, and run the **DbDesignGenerator** command again.

1. Check the specified directory locations to see the database scripts that were generated. Each directory additionally includes a **createDB2.sh** script that you can use to run the SQL.

   To use these scripts to create the IBM Business Process Manager database objects in the DB2 for z/OS subsystem, you must first transfer the scripts to the z/OS system.

2. Use FTP to transfer all the generated database scripts to the z/OS system that contains the installation of DB2. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.

3. Run the **createDB2.sh** script from the z/OS UNIX System Services command environment to create the DB2 for z/OS database objects.

   Note: The **createDB2.sh** script requires execute permissions.

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-zOS-

...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with a DB2 for z/OS database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Creating Process Center stand-alone profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   - Run the command *install_root*/bin/ProfileManagement/pmt.sh.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.

- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

You must specify a user name under which the service runs.

To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

b. Click **Browse**.

c. Specify the fully qualified path name for the design file.

   With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.

d. Click **Next**. The design file location is passed to the command line to complete the database configuration.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the `bootstrapProcessServerData` command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   - Run the command *install_root*/bin/ProfileManagement/pmt.sh.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The

password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

You must specify a user name under which the service runs.

To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. On the Process Server Configuration page, set the values for the following parameters.

    • **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    • Environment **Type**: Select how the Process Server is used:

      – Select **Production** if the server is to be used in a production capacity.

      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    • **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    • **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

    • **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

    • **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

    • **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

16. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

       With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.

    d. Click **Next**. The design file location is passed to the command line to complete the database configuration.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_StandAlone.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   `manageprofiles.sh -create -templatePath` *install_root*`/profileTemplates/BPM/default.procctr`

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   `manageprofiles.sh -response` *myResponseFile*

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with a DB2 for z/OS database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root`/java/bin/java -Duser.language=`*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root`/java/bin/java -Duser.language=de` *install_root*`/bin/ProfileManagement/startup.jar`

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* `> IBM >` *your_product* `> Profile Management Tool`.
   - Run the command *install_root*`/bin/ProfileManagement/pmt.sh`.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
      With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.
   d. Click **Next**. The design file location is passed to the command line to complete the database configuration.

9. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

10. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with a DB2 for z/OS database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
   - Run the command `install_root`/bin/ProfileManagement/pmt.sh.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.

      With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.
   d. Click **Next**. The design file location is passed to the command line to complete the database configuration.
10. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.
11. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions

are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating and configuring DB2 for z/OS databases after stand-alone profile creation:

After creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

DB2 for z/OS authorization prerequisites:

Before you create the IBM Business Process Manager databases, you must ensure that the required authorizations are granted for your DB2 for z/OS version. Also ensure that the appropriate storage groups and buffer pools are assigned, and configure clustering if necessary.

User authorization requirements for DB2 for z/OS

Ask your DB2 for z/OS system administrator to check the authorizations that have been granted to ensure that you have not granted more authority than necessary to any user ID. It can be tempting to grant DB2 SYSADM authority to the JCA authentication aliases in order to avoid possible problems with DB2 security during the configuration. The WebSphere administrator ID should not require more than DBADM authority to define the IBM Business Process Manager databases.

The following storage group, database, and buffer pool GRANT permissions are provided by default, for the WebSphere administrator identified as #DB_USER#. These permissions are available in the createDatabase.sql database script that is generated by the database design tool:

```
GRANT USE OF STOGROUP #STOGRP# TO #DB_USER# WITH GRANT OPTION;
GRANT DBADM ON DATABASE #DB_NAME# TO #DB_USER#;
GRANT USE OF ALL BUFFERPOOLS TO #DB_USER#;
```

The following GRANT permission might be required to permit the #DB_USER# user to create sequences and stored procedures with a schema qualifier of #SCHEMA#:

```
GRANT CREATEIN,ALTERIN,DROPIN ON SCHEMA #SCHEMA# TO #DB_USER# WITH GRANT OPTION;
```

The following permissions are also required:

```
GRANT CREATE ON COLLECTION #SCHEMA# TO #DB_USER#;
GRANT BINDADD TO #DB_USER#;
```

Authorization requirements for views on DB2 for z/OS V10

If you are planning to use DB2 for z/OS V10, additional permissions are required for views in the database:

- Before you run the SQL to define views, you might need to set the DBACRVW subsystem parameter to YES.

  This setting ensures that WebSphere administrator IDs with DBADM authority on database #DB_NAME# can create views for other user IDs.

- On DB2 for z/OS V10, the WebSphere administrator ID must be specifically granted access to views, because access is not implicitly granted to users with DBADM authority on the database. Individual GRANT statements or a Resource Access Control Facility (RACF®) group can be used to provide access to views in DB2 for z/OS V10. Ask your DB2 for z/OS administrator to provide this access by using either of the following methods:

  – Issue an explicit GRANT statement for each view. For example, the following sample GRANT statements can be issued for user ID WSADMIN:

    ```
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_SERVICE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.APPLICATION_COMP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG_B TO WSADMIN WITH GRANT OPTION;
    ```

```
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY_LDESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_CPROP TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_DESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.EVENT TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.MIGRATION_FRONT TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_INSTANCE TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPLATE TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPL_ATTR TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROPERTY TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROP_TEMPL TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.SHARED_WORK_ITEM TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_CPROP TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_DESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_HISTORY TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_DIST_TARGET TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_LDESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_ITEM TO WSADMIN WITH GRANT OPTION;
```

– Define a RACF group that corresponds to the schema name for the views, and connect the WebSphere administrator ID to the RACF group. For example, you can define a RACF group named S1CELL, and connect user WSADMIN to it, as follows:

```
INFORMATION FOR GROUP S1CELL
 SUPERIOR GROUP=ZWPS   OWNER=ZWPS   CREATED=07.144
 INSTALLATION DATA=OWNED BY EMP SERIAL 009179, SITE ABCUK
 NO MODEL DATA SET
 TERMUACC
 NO SUBGROUPS
 USER(S)= ACCESS= ACCESS COUNT= UNIVERSAL ACCESS=
   WSADMIN   CONNECT   000000    NONE
     CONNECT ATTRIBUTES=NONE
     REVOKE DATE=NONE    RESUME DATE=NONE
```

Using the configuration planning spreadsheet to define authorizations

If you have downloaded the configuration planning spreadsheet for use, you can alternatively use this spreadsheet to generate the GRANT permissions that are required for users and for DB2 for z/OS V10 views (as identified in the preceding sections in this topic). The configuration planning spreadsheet is available from Techdoc WP102075 in the IBM Support Portal.

The Database worksheet in the spreadsheet lists a set of sample SQL statements that can be used to create the databases and storage groups. Additionally, the GRANT permissions that are required to authorize the WebSphere administrator and to provide access to DB2 for z/OS V10 database tables are provided. When you specify the user and database object names on the BPMVariables worksheet of the spreadsheet, these values are propagated to the Database worksheet, and are used to complete the CREATE and GRANT statements with the appropriate values.

Ask your DB2 for z/OS system administrator to use the relevant CREATE statements to create the databases and storage groups, and to use the GRANT statements to authorize the WebSphere administrator. For more information about using the artifacts generated from the spreadsheet, see the accompanying PDF document in the Techdoc.

Storage group assignments and buffer pool usage

Ask your DB2 for z/OS system administrator to check the storage group assignments and buffer pool usage. Incorrect storage group assignment and buffer pool usage might not show up as an error message in a log, but might cause problems later. It is better to resolve such problems now rather than when the system has been handed over for use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.

Clustering requirements

If you intend to configure clustering, your DB2 for z/OS system must be running in data-sharing mode.

Related tasks:

"Creating database design files and database scripts (AIX stand-alone)" on page 493
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (AIX network deployment)" on page 614
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux stand-alone)" on page 155
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux network deployment)" on page 277
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris stand-alone)" on page 826
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris network deployment)" on page 949
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Windows stand-alone)" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

"Creating database design files and database scripts (Windows network deployment)" on page 1304
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating databases in the DB2 for z/OS subsystem:

When you use the database design tool (**DbDesignGenerator**) to define your database configuration, you can generate the database scripts that are required for creating the databases for the IBM Business Process Manager components.

You can use various tools to run these database scripts:
- When you run the database design tool to generate the database scripts, the **createDB2.sh** script is also generated. You can use **createDB2.sh** to run the database scripts.

- You can use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to run the database scripts.

Choosing which tool to use

You can choose one tool over another based on experience and familiarity, or personal preference. Your organization might also have implemented standards or conventions for the tools used to create DB2 for z/OS objects, particularly in a production environment.

Considerations for choosing the createDB2.sh script
- `createDB2.sh` can create all your database objects in one simple execution of the tool, so it is a good choice if this is your first server implementation.
- `createDB2.sh` runs the database scripts that the database design tool (`DbDesignGenerator`) generates.
- `createDB2.sh` runs the SQL for each component in the correct sequence.
- `createDB2.sh` creates database objects according to a naming convention that you define.
- `createDB2.sh` organizes the layout of database objects across DB2 for z/OS databases.
- `createDB2.sh` issues GRANT permissions to database, storage group, and buffer pool objects.
- `createDB2.sh` automatically completes customization of the service integration bus Data Definition Language (DDL).
- `createDB2.sh` runs in a UNIX System Services environment.
- `createDB2.sh` produces an audit trail of the objects that it creates.

Considerations for choosing other tools
- You might prefer to use the DB2 command line processor to run the SQL statements in the UNIX Systems Services environment. You must first run the `createDB2.sh` script in a mode that bypasses execution of the SQL statements and instead consolidates them into two `.sql` files. You can then run these files by using the command line processor.
- There is no restriction on the naming or organization conventions that apply to the database objects other than the standard database subsystem restrictions.
- Some tools can be run from a z/OS environment.
- The tools can produce an audit trail of the DB2 database commands that have been issued.

Related tasks:

"Creating database design files and database scripts (Linux stand-alone)" on page 155
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Configuring the DB2 command line processor:

Before you run the `createDB2.sh` script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

Ensure that a properties file, for example, `clp.properties`, exists for the DB2 command line processor. If required, you can create your own properties file by using the sample properties file that is available in the directory where the command line processor is installed. For more information, see your DB2 for z/OS documentation.

Complete the following configuration steps in the z/OS UNIX System Services environment from which the `createDB2.sh` script will be run:

1. Configure the DB2 command line processor for each user ID that will work with DB2 for z/OS from the command line. You can update the personal or shared user profiles as follows:

- Modify the CLASSPATH environment variable to include the `clp.jar` file.
- Use the CLPPROPERTIESFILE environment variable to define the fully qualified name of the properties file for the command line processor.
- Define the **db2** command as an alias for the command that starts the command line processor.
- Specify the `DB2JccConfiguration.properties` file that defines the JDBC properties to be applied to the command line processor.

You can use the following syntax to add the required entries to the `.profile` or `/etc/profile` file:

```
export CLPHOME=clp_install_dir
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=clp_properties_file_path
alias db2="java -Ddb2.jcc.propertiesFile=
/file_path/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

For example:

```
export CLPHOME=/shared/db2910_base
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=/wasv8config/clp.properties
alias db2="java -Ddb2.jcc.propertiesFile=
/wasv8config/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

2. In the properties file for the command line processor, define alias names that can be used to connect to the DB2 for z/OS server. An alias name definition includes the following entities:

- A URL that specifies the domain name or IP address of the database server, the port on which the server listens, the DB2 location name defined during installation, and the property for the JDBC connection. The URL can take the form: *server*:*port*/*database* property=*value*. The port and property values are optional, and the DB2 location name must be specified in uppercase characters.
- A user ID and an associated password that can be used to connect to the DB2 server. This user ID should correspond to the user ID (with SYSADM authority) that the DB2 system administrator uses to run the **createDB2.sh** script.

You can add the required alias name entries to the properties file by using the following syntax:

```
DB2ALIASNAME=URL,user_ID,password
```

For example:

```
DSNXWBD=localhost:9446/DSNXWBD,SYSADM1,SYSPWRD1
```

Tip: When you define a *DB2ALIASNAME* value in the properties file, ensure that the correct connection details are specified to avoid connecting to the wrong database and inadvertently overwriting its contents.

3. Configure the DB2 DBACRVW subsystem parameter to enable user IDs with DBADM authority on a database to perform the following tasks for other user IDs: create views on tables in the database, create aliases for tables, and create materialized query tables. You can use the installation Command List (CLIST) to access the DSNTIPP ISPF panel and update the DBADM CREATE AUTH field to set DB2 ZPARM DBACRVW=YES.

Use the **createDB2.sh** script to either run the SQL to create the database objects for a specified database, or to consolidate the SQL statements into two `.sql` files that you can run later using other database tools.

Related tasks:

"Creating DB2 for z/OS database objects using the createDB2.sh script"
After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating DB2 for z/OS database objects using the createDB2.sh script:

After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

You can also use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to create and populate databases.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

The number of databases that you create for your IBM Business Process Manager installation can depend on your topology, and how you want to distribute your database objects across the DB2 for z/OS subsystem. Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created. For example:

- To create a single database, you can run **createDB2.sh** once from a directory that contains all the database scripts that were generated for all the IBM Business Process Manager components.
- To create multiple databases at the cell level and cluster levels, you can run **createDB2.sh** once from each directory that contains the database scripts required to create the database objects for the cell and clusters.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   ```
   cd /u/work/S4CELLDB
   ```

2. Run the **createDB2.sh** script by using the following syntax:

   ```
   createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate
   -DBVCat volume_catalog -DBUser DB_user_ID -RunSQL
   ```

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
   Specifies the name of the database to be created.

   -DBSto
   Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
   Creates the database.

   -DBVCat
   Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

   -DBUser
   Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

   -RunSQL
   Runs the SQL statements that create the database objects.

   For example:

   ```
   createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
   -DBUser S4ADMIN -RunSQL
   ```

   For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

3. Review the messages that are displayed in the console, checking that no error messages are displayed.

   Tip: The first time that you run **createDB2.sh** to create the database, you see a few messages because the script first attempts to drop the database, which at that stage does not yet exist. These messages can be ignored, and subsequent invocations of **createDB2.sh** for the same database will not produce such messages.

   When the script has finished running, you can also review the z_output.txt file, which provides an audit trail of the operations completed and status messages. This file is stored in the directory from which you ran the **createDB2.sh** script.

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 184
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Linux stand-alone)" on page 155
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using the DB2 command line processor:

When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

You can also run these .sql files by using any other database tool of your choice, such as SPUFI or DSNTEP2.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

```
cd /u/work/S4CELLDB
```

2. Run the **createDB2.sh** script by using the following syntax:

   ```
   createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate
   -DBVCat volume_catalog -DBUser DB_user_ID
   ```

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
   Specifies the name of the database to be created.

   -DBSto
   Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
   Creates the database.

   -DBVCat
   Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

   -DBUser
   Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

   Tip: By omitting the **-RunSQL** parameter, you bypass the execution of the SQL statements that create the database objects, and instead consolidate the statements into two .sql files.

   For example:

   ```
   createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
   -DBUser S4ADMIN
   ```

   For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

   The z_schema.sql and z_schemaProc.sql files, which hold the consolidated SQL statements, are generated in the directory from which you ran the **createDB2.sh** script. The z_schemaProc.sql file contains SQL statements for stored procedures, and is generated in addition to z_schema.sql because stored procedures require the "at" sign (@) as a statement termination character when running the command line processor.

3. Run the DB2 command line processor in batch mode to execute the SQL in the z_schema.sql file:

   ```
   db2 -f /createDB2.sh_path/z_schema.sql
   ```

   For example:

   ```
   db2 -f /u/work/S4CELLDB/z_schema.sql
   ```
   The command line processor reads the data in the file, and processes the commands in the file consecutively.

4. Run the DB2 command line processor again to execute the SQL in the z_schemaProc.sql file, and additionally use the **-td** parameter to define @ as the statement termination character:

   ```
   db2 -td@ -f /createDB2.sh_path/z_schemaProc.sql
   ```

   For example:

   ```
   db2 -td@ -f /u/work/S4CELLDB/z_schemaProc.sql
   ```

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 184
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Linux stand-alone)" on page 155
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using SPUFI or DSNTEP2:

You can use tools such as SPUFI or DSNTEP2 to run the database scripts that are used to create the DB2 for z/OS database objects for your configuration.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, which are required to create the database, into that directory.

  Tip: The generated scripts that you use to create the database objects can either be in ASCII or EBCDIC format. Typically, the generated `.sql` files are in ASCII format, and the equivalent `.ddl` files are in EBCDIC format.
- Use FTP to transfer the database scripts to the z/OS system that contains the DB2 for z/OS installation.
- Create or augment the profile.

You can create the database objects by using the tool of your choice. For example:

SPUFI A utility that runs SQL scripts from z/OS. SPUFI uses EBCDIC input.

DSNTEP2
      A sample dynamic SQL program provided with the DB2 for z/OS product.

1. Assign the appropriate read permissions to the SQL scripts; for example:

   ```
   chmod 644 createTable_AppScheduler.sql
   ```

2. If the tool that you want to use to view, edit, and run the scripts requires the scripts to be in EBCDIC format, rather than ASCII format, use the **iconv** command to convert the files to EBCDIC. For example:

   ```
   iconv -t IBM-1047 -f ISO8859-1 createTable_AppScheduler.sql >
   createTable_AppScheduler_EBCDIC.sql
   ```

   Important: After converting from ASCII to EBCDIC, check that no SQL statements exceed 71 characters in length. Longer lines will lead to line truncation and invalid statements when copying to fixed-width MVS™ data sets.

   Tip: If you have converted the files from ASCII format to EBCDIC, but need to run the files in ASCII format, you can also use **iconv** to convert the files back to ASCII. For example:

```
iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >
createTable_AppScheduler.sql
```

3. Edit the values in the `createDatabase.sql` and `dropDatabase.sql` files according to your requirements. The following symbolic variables need to be updated:

```
@STOGRP@    = DB2 Storage group name
@DB_NAME@   = DB2 Database name
@SCHEMA@    = DB2 SQLID (Schema Qualifier)
@BPTABLE4K@ = Buffer Pool of 4k Size
@BPINDEX@   = Buffer Pool Index
@VOLUMES@   = DB2 comma separated list of volume-ids
@VCAT@      = DB2 integrated catalog facility name
@DB_USER@   = The user ID which will be used to create the database objects
```

4. To create database objects outside of the z/OS UNIX environment by using SPUFI or DSNTEP2, copy the customized database scripts from z/OS UNIX to a partitioned data set.

5. Run the customized scripts by using the tool of your choice.

   Tip: If you previously ran the **createDB2.sh** script and chose to bypass execution of the SQL scripts, you can also run the consolidated SQL files (`z_schema.sql` and `z_schemaProc.sql`), which were generated.

6. Verify that the database tables are created successfully with no errors by inspecting the output.

Related tasks:

"Creating database design files and database scripts (Linux stand-alone)" on page 155
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 188
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (`z_schema.sql` and `z_schemaProc.sql`) that you can run later by using the DB2 command line processor.

Creating the messaging engine data stores:

If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

You must create and populate a messaging engine data source for each of the following components that you configure:
- Service Component Architecture system bus
- Service Component Architecture application bus
- Process Server
- Performance Data Warehouse
- Common Event Infrastructure

You can create all the database objects in one or more databases in the DB2 for z/OS subsystem. Take note of the following considerations:
- All messaging engines use the same table names. Therefore, the tables for each messaging engine require a unique schema qualifier.
- When you use the database design tool to define the database configuration for each messaging engine, you can specify a prefix for table space names:

- If you intend to use a single database for all the messaging engines, specify a unique table space prefix for each messaging engine to make its table space name unique within the database.
- If you intend to use a separate database for each messaging engine, the table space prefixes that you specify for the messaging engines can be identical or unique.

1. For each messaging engine, complete the following steps to generate the required database scripts:

   a. Run the database design tool (**DbDesignGenerator**) from the *install_root*/util/dbUtils directory.

   b. Select option **(2)Create a database design for a single component**, and then select the appropriate option for the messaging engine.

   c. Complete the remaining prompts in the tool to define the database configuration and to generate the scripts.

   Tip: As an alternative to running the database design tool multiple times to generate scripts for each of the messaging engines, you can run the tool once using option **(1)Create a database design for Standalone profile or Deployment Environment**. With this option, you can define the database configuration and generate database scripts for the following components in a single pass through the tool: Common database, Business Process Choreographer, Performance Data Warehouse, Process Server, Business Space, and the six messaging engines.

2. Run the generated DDL scripts using the tool of your choice.

The messaging engine data stores are created.

Related tasks:

"Creating database design files and database scripts for a specific component with DB2 for z/OS in a stand-alone environment" on page 161
You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

"Creating database design files and database scripts for stand-alone profiles with DB2 for z/OS" on page 155
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

Granting table privileges to the JCA authentication alias user ID:

If the schema name you are using is not the same as the JCA authentication alias user ID, you must grant a subset of DB2 for z/OS privileges to the JCA authentication alias user ID.

The database scripts for the service integration bus (SIB) contain commented GRANT commands that you can use as a basis for granting access to the SIB tables. However, the other IBM Business Process Manager components do not supply GRANT statements.

Use a schema name that is different from the JCA authentication alias to prevent the alias user ID from having the authority to drop tables. (The authority to drop tables is implicitly granted to the creator, that is, the schema.) Note that it does not make sense to grant a privilege like DBADM to the JCA authentication alias user ID because DBADM also has the ability to drop tables.

If you want IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the database scripts and editing them to construct GRANT commands from the CREATE commands. You can create GRANT commands like the one shown in the following example:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

where *userid/sqlid* is the JCA authentication alias user ID.

Note: Typically, the creator of a database object has implicit use of that object without requiring additional GRANT permissions. However, for DB2 for z/OS Version 10, additional GRANT permissions might be required for views because access to views is not implicitly granted to the creator.

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

    install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

- **bootstrapProcessServerData.sh [-dbJDBCClasspath *classpath*]**

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:
bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:
bootstrapProcessServerData -dbJDBCClasspath *JDBC_DRIVER_PATH*

Setting the correct schema name for the messaging engines:

To ensure that the service integration bus (SIB) messaging engines can access the appropriate DB2 for z/OS tables, the correct schema name must be set for the messaging engines. You can use the administrative console to change the schema names.

Start the server.

1. Log in to the administrative console.
2. Navigate to **Service Integration** > **Buses**.
3. For each messaging engine:
   a. Select **Messaging engines**, and then click the name that is displayed.
   b. Click **Message store**.
   c. Change the value of **Schema name** to the name used when creating the DB2 for z/OS tables for this messaging engine.
   d. Click **Apply**.
   e. Save your configuration changes.
4. Verify that the messaging engines can be started:
   a. Log out of the administrative console.
   b. Stop, and then restart the server.
   c. Look in the output of the server log for successful SIB messaging engine startup messages. For example:
   ```
   BBOO0222I: "BusName"
   CWSID0016I: Messaging engine MessagingEngineName is in state Started.
   ```

Configuring a stand-alone environment with an Oracle database server on Linux:

You can configure a stand-alone environment for IBM Business Process Manager using an Oracle database server.

Setting up Oracle databases:

You or your database administrator (DBA) can configure the Process Server database, Performance Data Warehouse database, and Common database before, after, or during creating or augmenting a profile.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

You have the following options for creating and configuring the databases:
- You or your DBA creates the databases in advance and the Profile Management Tool configures them for you during profile creation or augmentation.
- You or your DBA creates a database design file using the database design tool, and you pass the file to the Profile Management Tool or **manageprofiles** command-line utility during profile creation or augmentation.
- You postpone the database configuration, and you or your DBA creates the required databases and database tables afterwards by running the scripts that are generated during profile creation or augmentation.

Creating database design files for Oracle:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for stand-alone profiles with Oracle:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   ```

```
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]         WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]      WBI_BSPACE :  [status = not complete]
   (6)[SibME]       WBI_BPC_ME :  [status = not complete]
   (7)[SibME]       WBI_CEI_ME :  [status = not complete]
   (8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]       WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]      BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]      BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name(SID) [default=CMNDB] :
   Database User name[default=] :
   Database schema [default=] :
   System user name(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   Database Location(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   ```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
   ```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

----------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]    WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
(6)[SibME]      WBI_BPC_ME :  [status = complete]
(7)[SibME]      WBI_CEI_ME :  [status = complete]
(8)[SibME]     WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]    WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]    BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

If you selected **bpm.advanced.standalone**, you must manually configure the **BPM_PerformanceDW**, **BPM_ProcessServer**, and the corresponding **SibMe** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :3
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :4
--------------------------------------------------------------------------------

[status] BPM_ProcessServer is not complete with 3 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'databaseUser' for DB_USER is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as
    [status = complete] in the database design tool, type the appropriate number to select **[save and
    exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to
    which you want to save the file and then press Enter. If you have not yet created the directory in
    your file system, the database design tool will automatically create it when the file is generated.
    After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and
    then press Enter. If a file of the same name already exists in the specified directory, you can choose

to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/Oracle-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:
* The database design file is created in the specified directory.
* The database scripts are created in one or more specified directories.
* A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
* If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
* If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
* When you use the Profile Management Tool to create a profile
* When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with Oracle in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
* Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  – The location of the database tables.
  – The location of the JDBC driver on the system where the server profile will be created.
  – The user ID and password for authenticating to the database.
* Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
* An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.

- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

You are prompted to choose a component, as shown in the following example:

```
[info] Please pick one of the following [component(s)] :

(1)bpc
(2)bpcreporting
(3)bpm_performancedw
(4)bpm_processserver
(5)bspace
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   `Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :`

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name(SID) [default=BPMDB] :
   Database User name[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/Oracle-ProcessServer for BPM_ProcessServer
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v Oracle-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with an Oracle database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your Oracle database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

To configure the database information while creating or augmenting the profile, you must know the service name for your Oracle instance.

1. Create a table space.

   ```
   SQL> CREATE TABLESPACE [tablespace_name] DATAFILE '[datafile_name]' SIZE 50M AUTOEXTEND ON NEXT 10M
   MAXSIZE UNLIMITED LOGGING;
   ```

2. Create the users. You will specify these users on the Database Configuration - Part 2 page in the Profile Management Tool. The following example assumes you create a BPMDBA user name for the Process Server database, a PDWDBA user name for the Performance Data Warehouse database, and a CMNDBA user name for the Common database:

```
SQL> CREATE USER BPMDBA IDENTIFIED BY [password] DEFAULT TABLESPACE [tablespace_name];
SQL> CREATE USER PDWDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
SQL> CREATE USER CMNDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
```

3. Grant privileges to the users that you specified in the previous step. For example:

```
SQL> GRANT ALL PRIVILEGES TO BPMDBA;
SQL> GRANT ALL PRIVILEGES TO PDWDBA;
SQL> GRANT ALL PRIVILEGES TO CMNDBA;
```

4. Grant execute privileges on DBMS_LOCK. For example:

```
SQL> GRANT execute on DBMS_LOCK to BPMDBA;
SQL> GRANT execute on DBMS_LOCK to PDWDBA;
SQL> GRANT execute on DBMS_LOCK to CMNDBA;
```

Creating Process Center stand-alone profiles with an Oracle database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   - Run the command *install_root*/bin/ProfileManagement/pmt.sh.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.
   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

- In the **Password** field, enter the password for the certificate
- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Oracle**.

    b. Optional: If you want to change the default values, enter new names for the required databases.

       • The database names can be the same.

       • You must input the database service name for each database.

       • The database must already exist.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the

database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

   d. Click **Next**.
17. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

   Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 53. Required database configuration fields for Oracle

Field	Action needed
Process Server database	For the Process Server database, enter values for the following parameters: **User name** Enter a user name for the Process Server database (such as BPMDBA). **Password** Enter the password that you specified when you created the user in Oracle. **Confirm password** Confirm the password by reentering it. **Note:** The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: **User name** Enter a user name for the Performance Data Warehouse database (such as PDWDBA). **Password** Enter the password that you specified when you created the user in Oracle. **Confirm password** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the `bootstrapProcessServerData` command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with an Oracle database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root`/java/bin/java -Duser.language=`locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root`/java/bin/java -Duser.language=de `install_root`/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
   - Run the command `install_root`/bin/ProfileManagement/pmt.sh.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

    a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

    b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

    c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

       When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

    d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

    e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

    • In the **Server name** field, enter a name for the server or accept the default value.

    • In the **Host name** field, enter a name for the host or accept the default value.

    • In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name, Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

       – In the **Path** field, enter the directory path to the existing certificate.

       – In the **Password** field, enter the password for the certificate

       – In the **Keystore type** field, select the keystore type for the certificate you are importing.

       – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

       – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the `startServer` or `startManager` commands. For example, if you configure a server as a Linux service and issue the `startServer` command, the `wasservice` command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    - Environment **Type**: Select how the Process Server is used:

      – Select **Production** if the server is to be used in a production capacity.

      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

    - **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

16. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

17. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **Oracle**.
    b. Optional: If you want to change the default values, enter new names for the required databases.
       - The database names can be the same.
       - You must input the database service name for each database.
       - The database must already exist.
    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.
    d. Click **Next**.

18. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

    Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 54. Required database configuration fields for Oracle

Field	Action needed
Process Server database	For the Process Server database, enter values for the following parameters:
	User name
	Enter a user name for the Process Server database (such as BPMDBA).
	Password
	Enter the password that you specified when you created the user in Oracle.
	Confirm password
	Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 54. Required database configuration fields for Oracle (continued)

Field	Action needed

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	     Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	     Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	     Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: ${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

19. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

20. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_StandAlone.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/default.procctr
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with an Oracle database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

 1. Use one of the following methods to start the Profile Management Tool.
    - Start the tool from the First steps console.
    - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
    - Run the command *install_root*/bin/ProfileManagement/pmt.sh.
 2. Shut down any servers associated with a profile you plan to augment.
 3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
 4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
 5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
 6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

    The **Typical** option augments a profile with default configuration settings.

    The **Advanced** option lets you specify your own configuration values for a profile.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.
   a. From the **Select a database product** list, select **Oracle**.
   b. Optional: If you want to change the default values, enter new names for the required databases.
      - The database names can be the same.
      - You must input the database service name for each database.
      - The database must already exist.
   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.
   d. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

    Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 55. Required database configuration fields for Oracle

Field	Action needed
Process Server database	For the Process Server database, enter values for the following parameters: **User name** Enter a user name for the Process Server database (such as BPMDBA). **Password** Enter the password that you specified when you created the user in Oracle. **Confirm password** Confirm the password by reentering it. **Note:** The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: **User name** Enter a user name for the Performance Data Warehouse database (such as PDWDBA). **Password** Enter the password that you specified when you created the user in Oracle. **Confirm password** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.
- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

11. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with an Oracle database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
     - Run the command *install_root*/bin/ProfileManagement/pmt.sh.
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

The **Typical** option augments a profile with default configuration settings.

The **Advanced** option lets you specify your own configuration values for a profile.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

   If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the

database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

> **Important:** If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.

a. From the **Select a database product** list, select **Oracle**.

b. Optional: If you want to change the default values, enter new names for the required databases.

- The database names can be the same.
- You must input the database service name for each database.
- The database must already exist.

c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

d. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

> **Important:** You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 56. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 56. Required database configuration fields for Oracle (continued)

Field	Action needed

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.
- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

12. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_StandAlone.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring Oracle databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root/profile*/dbscripts/ProcessServer/Oracle/ at profile creation time.
2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.
3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). In this example, **Oracle1** is the password to connect to the Oracle instance and service:

   ```
   wbi/ProcessServer/BPMDBA>sqlplus BPMDBA/Oracle1@BPMDBA @createTable_ProcessServer.sql
   ```

   Make sure all SQL statements succeed without any errors.
4. Create the table procedures for Process Server.

From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). For example:

```
wbi/ProcessServer/BPMDBA>sqlplus BPMDBA/Oracle1@BPMDBA @createProcedure_ProcessServer.sql
```

Make sure all SQL statements succeed without any errors.
5. Reset the connection.

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
• Created or augmented a stand-alone profile.
• Chosen not to run the database scripts to initialize the databases during the configuration.
• Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.
1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root/profile*/dbscripts/PerformanceDW/Oracle/ at profile creation time.
2. Connect to your database.

Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **oracleDBUser**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **oracleDBUser** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.
3. Create the tables for Performance Data Warehouse.

From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). In this example, **Oracle1** is the password to connect to the Oracle instance and service:

```
wbi/PerformanceDW/BPMDBA>sqlplus PDWDBA/Oracle1@BPMDBA @createTable_PerformanceDW.sql
```

Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
• Created or augmented a stand-alone profile.

1. Go to the directory containing the **configBusinessSpaceDB.sh** script. The default directory is *install_root/profile*/dbscripts/BusinessSpace/*node_name_server_name*/Oracle/CMNDB.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.sh

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

* **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath*]

where:

* **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:
bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:
bootstrapProcessServerData -dbJDBCClasspath *JDBC_DRIVER_PATH*

Configuring a stand-alone environment with an SQL Server database server on Linux:

You can configure a stand-alone environment for IBM Business Process Manager using a Microsoft SQL Server database server.

Creating SQL Server databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:

   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

   ```
   osql -b -S hostname -U db_user_account -P db_user_password
   -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
   ```

   where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.

   b. To create the Common database:

   ```
   osql -b -S hostname -U db_user_account -P db_user_password
   -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
   ```

   The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**.

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

   e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

   f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

   On Windows Vista and Windows 7:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

   c. Right-click **Local DTC** and then select **Properties**.

   d. Click the **Security** tab on the **Local DTC Properties** dialog box.

e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

f. Click **OK** again to close the Properties dialog box, and then close Component Services.

g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

b. Unzip archive to any folder.

c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the x86 folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the x64 folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating database design files for SQL Server:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for stand-alone profiles with SQL Server:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database

scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
    display help info.

-e db_design_file_name
    edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
    when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
    generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

    /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

    Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
    When the database design tool launches successfully, you see information similar to the following example:

    ```
    [info] running DbDesignGenerator in interactive mode...

    [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
    help at any time.
    [info] To accept the given default values, simply press the 'Enter' key.

    [info] Please pick one of the following [design option(s)] :

    (1)Create a database design for Standalone profile or Deployment Environment
    (2)Create a database design for a single component
    (3)Edit an existing database design
    (4)Generate database scripts from a database design
    (5)exit [q]

    Please enter the number for the design option :
    ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

    You are prompted to choose a database pattern, as shown in the following example:

    ```
    [info] Please pick one of the following [database pattern(s)] :

    (1)bpm.advanced.nd.topology
    (2)bpm.advanced.standalone
    (3)bpm.standard.nd
    (4)bpm.standard.standalone
    (5)wesb.nd.topology
    (6)wesb.standalone
    ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
(2)[BPC]        WBI_BPC : [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer : [status = not complete]
(5)[BSpace]     WBI_BSPACE : [status = not complete]
(6)[SibME]      WBI_BPC_ME : [status = not complete]
(7)[SibME]      WBI_CEI_ME : [status = not complete]
(8)[SibME]      WBI_SCA_APP_ME : [status = not complete]
(9)[SibME]      WBI_SCA_SYS_ME : [status = not complete]
(10)[SibMe]     BPM_PerformanceDW_ME : [status = not complete]
(11)[SibMe]     BPM_ProcessServer_ME : [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

```
[status] WBI_CommonDB is not complete with 1 remaining item(s):
[ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database server host[default=] :
Database User name[default=] :
Database schema[default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.
   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server port[default=1433] :

      [info] Please pick one of the following {Do you want to use windows authentication for the
      databases ? (s)] :

      (1) false
      (2) true

      Data source user name[default=] :
      Data source password[default=] :
      MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   --------------------------------------------------------------------------------
   ```

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]          WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

If you selected **bpm.standard.standalone**, after you configure the **BPM_ProcessServer**, you must manually configure the **BPM_PerformanceDW** component for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(5)[save and exit]

Please enter the number for the database component :2
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.standalone is complete with 0 remaining item(s):

Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
        generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the
    database design tool, type y and press Enter. A series of information messages is displayed to
    indicate that the scripts for all the components have been generated. For each component, you see
    information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/SQLServer-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the
  DbDesignGenerator command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the
  option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database
  design file to ensure that the configured run time matches the database tables created from the SQL
  scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process
Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with SQL Server in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables
required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only
from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that
  describes the general purpose of the database configuration, supplied by the database administrator or
  solution architect. Alternatively, it might be a description of required parameters and properties. This
  information must include:
  – The location of the database tables.
  – The location of the JDBC driver on the system where the server profile will be created.
  – The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the
  database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship
  between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database
  design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

```
[info] Please pick one of the following [component(s)] :

(1)bpc
(2)bpcreporting
(3)bpm_performancedw
(4)bpm_processserver
(5)bspace
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=BPMDB] :
   Database server host[default=] :
   Database User name[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.
   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the data source properties section.
   Database server port[default=1433] :

   [info] Please pick one of the following {Do you want to use windows authentication for the
   databases ? (s)] :

   (1) false
   (2) true

   Data source user name[default=] :
   Data source password[default=] :
   MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
   ```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

   ```
   Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
   ```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

   ```
   generate database scripts? (y/n) [default=y] :
   ```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/SQLServer-ProcessServer for BPM_ProcessServer
    [info] thanks, quitting now ...
    ```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the `manageprofiles` command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v SQL Server-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with an SQL Server database server:

You can create profiles using the Profile Management Tool or the `manageprofiles` command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your SQL Server database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

Before creating a profile, you must install Microsoft SQL Server on the server that hosts the database.

Restriction: The Process Server database (BPMDB) and the Performance Data Warehouse database (PDWDB) must NOT be case-sensitive. Other databases can be case-sensitive.

When you create your database schemas, you must have a user ID with enough authority to create your tables. After the tables are created, the applications must have enough authority to select, insert, update, and delete information in the tables.

The following table shows the database privileges that are required to access the data store.

Table 57.

Database management system	Minimum privilege required to use the data store tables	Additional privilege required to create the data store tables
Microsoft SQL Server	Configure the SQL Server for SQL Server so that authentication can be based on an SQL server login ID and password. The user ID can own the tables or be a member of a group that has sufficient authority to issue TRUNCATE TABLE statements.	The user ID requires the CREATE TABLE statement privilege.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the `CMNDB` database as owner `dbo` using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- `MEDPS00` (Process Server messaging engine)
- `MEDPE00` (Performance Data Warehouse messaging engine)

IBM Business Process Manager packages JDBC drivers for SQL Server. For information about the JDBC drivers (including version and level information), see the Detailed hardware and software requirements for IBM Business Process Manager page.

Note: You are responsible for providing JDBC driver levels outside of what is packaged with IBM Business Process Manager.

You must configure XA transactions after the database is installed and before you start the server.

Creating Process Center stand-alone profiles with an SQL Server database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
     - Run the command `install_root`/bin/ProfileManagement/pmt.sh.

  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.

  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

  7. Advanced: On the Profile Name and Location page, perform the following steps:

     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.

     c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

        When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

     d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

     e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

  8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

     - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

     - In the **Server name** field, enter a name for the server or accept the default value.

     - In the **Host name** field, enter a name for the host or accept the default value.

- In the **Cell name** field, enter a name for the cell or accept the default value.

  Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones.

If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root/properties/portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Microsoft SQL Server**.

    b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

    d. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 58. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• **User name**
	  Enter the Process Server database user name.
	• **Password**
	  Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• **User name**
	  Enter the Performance Data Warehouse database user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.

Table 58. Required database configuration fields for Microsoft SQL Server - Part 2 (continued)

Field	Action needed
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\ SQLServer`

Table 59. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with an SQL Server database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   - Run the command *install_root*/bin/ProfileManagement/pmt.sh.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.
5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
7. Advanced: On the Profile Name and Location page, perform the following steps:

a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

You must specify a user name under which the service runs.

To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. On the Process Server Configuration page, set the values for the following parameters.

    • **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    • Environment **Type**: Select how the Process Server is used:

      – Select **Production** if the server is to be used in a production capacity.

      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    • **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    • **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

    • **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

    • **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

    • **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

16. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

17. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **Microsoft SQL Server**.

   b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   d. Click **Next**.

18. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 60. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	  Enter the Process Server database user name.
	• `Password`
	  Enter a password to authenticate with the Process Server database.
	• `Confirm password`
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• `Confirm password`
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Table 60. Required database configuration fields for Microsoft SQL Server - Part 2 (continued)

Field	Action needed
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 61. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

19. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

20. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:
   ```
   chmod 644 BPM_StandAlone.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   `manageprofiles.sh -create -templatePath` *install_root*`/profileTemplates/BPM/default.procctr`

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   `manageprofiles.sh -response` *myResponseFile*

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with an SQL Server database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root`/java/bin/java -Duser.language=`*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root`/java/bin/java -Duser.language=de` *install_root*`/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > `IBM` > *your_product* > `Profile Management Tool`.
   - Run the command *install_root*`/bin/ProfileManagement/pmt.sh`.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.

   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.

   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **Microsoft SQL Server**.

   b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the

database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

d. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 62. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	
Process Server database	For the Process Server database, enter values for the following parameters: • **User name** Enter the Process Server database user name. • **Password** Enter a password to authenticate with the Process Server database. • **Confirm password** Confirm the password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name** Enter the Performance Data Warehouse database user name. • **Password** Enter a password to authenticate with the Performance Data Warehouse database. • **Confirm password** Confirm the password to authenticate with the Performance Data Warehouse database.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\ SQLServer`

Table 63. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

11. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with an SQL Server database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
* Specify a database design file to be used for the database configuration.
* Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
* Create a web server definition.
* Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     * Start the tool from the First steps console.
     * Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
     * Run the command *install_root*/bin/ProfileManagement/pmt.sh.
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
     * The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.

- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

   If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Microsoft SQL Server**.

    b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

    d. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 64. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• **User name**
	  Enter the Process Server database user name.
	• **Password**
	  Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• **User name**
	  Enter the Performance Data Warehouse database user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 65. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

12. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the `bootstrapProcessServerData` command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.

- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring SQL Server databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/ProcessServer/SQLServer/ at profile creation time.
2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.
3. Create the tables for Process Server.

From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

4. Create the table procedures for Process Server.

   From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

   Important: Use **GO** as a delimiting character when executing the stored procedure.

5. Reset the connection.

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root/profile*/dbscripts/PerformanceDW/SQLServer/ at profile creation time.

2. Connect to your database.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **sqladmin**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **sqladmin** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.

3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.

1. Go to the directory containing the **configBusinessSpaceDB.sh** script. The default directory is *install_root*/*profile*/dbscripts/BusinessSpace/*node_name_server_name*/SQLServer/CMNDB.

2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.sh

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath***]**

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Important: If the bootstrap utility fails, check that when you created the Process Server and Performance Data Warehouse databases, the **COLLATE** attribute indicated case insensitive (**CI**), not case sensitive (**CS**). That is, the create command should look like this:

CREATE DATABASE *database_name* COLLATE SQL_Latin1_General_CP1_**CI**_AS

Failure to do so can result in an error like the following:

org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;

```
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

Bootstrap data onto the default stand-alone profile server:

```
bootstrapProcessServerData
```

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:

```
bootstrapProcessServerData -dbJDBCClasspath JDBC_DRIVER_PATH
```

Configuring a network deployment environment on Linux

For a network deployment configuration, you install the software and then create or augment a
deployment manager, create or augment at least one custom profile, and configure the network
deployment environment.

**Granting write permission of files and directories to nonroot users for profile creation or
augmentation:**

If you are not the user who installed the product, you must have write permission to selected directories
within the IBM Business Process Manager installation. The product installer can grant this permission or
create a group with permission to create or augment profiles.

The product installer (who can be a root or nonroot user) can grant write permission to the appropriate
IBM Business Process Manager files and directories to nonroot users. The nonroot users can then create
profiles. Alternatively, the product installer can create a group for users who are authorized to create
profiles or give individual users the authority to create profiles.

Nonroot users create their own profiles to manage their own environments. Typically, they manage
environments for development purposes.

Nonroot users must store their profiles in their private directory structure, not in the
install_root/profiles directory of the product.

Restrictions:
- IBM Business Process Manager does not support changing ownership of existing profiles from the
  product installer to nonroot users. A nonroot user cannot augment profiles owned by another user.
- Mechanisms within the Profile Management Tool that suggest unique names and port values are
  disabled for nonroot users. The nonroot user must change the default field values in the Profile
  Management Tool for the profile name, node name, cell name, and port assignments. The product

installer can assign nonroot users a range of values for each of the fields, and assign responsibility to the users for adhering to their assigned value ranges and for maintaining the integrity of their own definitions.

If you already created at least one profile, certain directories and files were created. You can skip the steps in this topic that create these directories and files. If no profile was previously created, you must complete the steps to create the required directories and files.

The following example task shows how to create a group that is authorized to create profiles. The terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager. The installer can perform the following steps to create the `profilers` group and give the group appropriate permissions to create a profile.

1. Log on to the IBM Business Process Manager system as the product installer. The product installer can be a root or nonroot user.
2. Using operating system commands, perform the following steps:
   a. Create a group named **profilers**, which will contain all users who can create profiles.
   b. Create a user named **user1**, who can create profiles.
   c. Add users **product_installer** and **user1** to the **profilers** group.
3. Log off and log back on as the installer to pick up the new group.
4. If no profile exists, create the following directories as the installer:
   - Create the *install_root*/**logs/manageprofiles** directory:

     ```
     mkdir install_root/logs/manageprofiles
     ```
   - Create the *install_root*/**properties/fsdb** directory:

     ```
     mkdir install_root/properties/fsdb
     ```
5. If no profile exists, create the `profileRegistry.xml` file as the installer. For this example, the file path is:

   ```
   install_root/properties/profileRegistry.xml
   ```

   Add the following information to the `profileRegistry.xml` file. The file must be encoded as UTF-8.

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <profiles/>
   ```
6. As the product installer, use operating system tools to change directory and file permissions. The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **/opt/IBM/WebSphere/AppServer**.

```
export WASHOME=/opt/IBM/WebSphere/AppServer
echo $WASHOME
echo "Performing chggrp/chmod per WAS directions..."
chgrp profilers $WASHOME/logs/manageprofiles
chmod g+wr  $WASHOME/logs/manageprofiles
chgrp profilers $WASHOME/properties
chmod g+wr  $WASHOME/properties
chgrp profilers $WASHOME/properties/fsdb
chmod g+wr  $WASHOME/properties/fsdb
chgrp profilers $WASHOME/properties/profileRegistry.xml
chmod g+wr  $WASHOME/properties/profileRegistry.xml
chgrp -R profilers $WASHOME/profileTemplates
```

Issue the following additional commands:

```
chgrp profilers $WASHOME/properties/Profiles.menu
chmod  g+wr $WASHOME/properties/Profiles.menu
```

You might have to change the permissions on additional files if the nonroot user encounters permission errors. For example, if the product installer authorizes a nonroot user to delete a profile, then the product installer might have to delete the following file:

```
install_root/properties/profileRegistry.xml_LOCK
```

Give write access to the nonroot user for the file to authorize the user to delete the file. If the nonroot user still cannot delete the profile, then the product installer can delete the profile.

The installer created the **profilers** group and gave the group the correct permissions to the directories and files required for a nonroot user to create profiles.

The nonroot user that belongs to the **profilers** group can create profiles in a directory that the nonroot user owns and to which the nonroot user has write permission. However, the nonroot user cannot create profiles in the installation root directory of the product.

The root user and the nonroot user can use the same tasks to manage profiles.

Creating databases and database design files:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. You must create the databases before network deployment.

Creating databases and database design files for DB2:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

Creating DB2 databases:

You can create the required databases before you create profiles.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

If you plan to use DB2 Universal Database, as part of preparing your database server:

- You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands during profile creation. Add the **db2profile** script to the /etc/profile file. Run

  ```
  vi /etc/profile
  ```

  and add the following lines:

  ```
  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

  After adding the db2profile script to the /etc/profile directory, you must run the **db2profile** script to set the DB2 environment.

- You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using `db2inst1` as the user ID, add the root user to the `/etc/group` administrative groups. Run

  ```
  vi /etc/group
  ```

  and update the following lines:

  ```
  dasadm:|;101:dasusr1,db2inst1,root
  db2iadm:|:102;root
  db2fadm:|:103;db2fenc1,root
  ```

If the procedure is not followed, you might see the following exceptions when creating or augmenting a profile.

- When the **db2profile** script is not run:

  ```
  /opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
  java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
  wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
  ```

- When the DB2 database manager is not running:

  ```
  SQL1032N No start database manager command was issued. SQLSTATE=57019
  ```

- When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:

  ```
  SQL1092N "ROOT" does not have the authority to perform the requested command.
  ```

Creating database design files for DB2:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with DB2:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database User name[default=] :
Schema name[default=] :
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
```

```
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.nd**, after you configure the master component, all database components are listed as complete.

    ```
    [info] Please pick one of the following [database component(s)] :

    (1)[BPM_ProcessServer]  BPM_ProcessServer : [master] [status = complete]
    (2)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
    (3)[SibMe]      BPM_PerformanceDW_ME :  [status = complete]
    (4)[SibMe]      BPM_ProcessServer_ME :  [status = complete]
    (5)[save and exit]

    Please enter the number for the database component :5

    [status] bpm.standard.nd is complete with 0 remaining item(s):
    ```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-CommonDB for WBI_CommonDB
```
After the last set of scripts is generated, you see information similar to the following example:
```
[info] thanks, quitting now ...
```

The following files are created:
* The database design file is created in the specified directory.
* The database scripts are created in one or more specified directories.
* A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
* If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
* If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
* When you use the Profile Management Tool to create a profile
* When you use the **manageprofiles** command-line utility to create a profile
* When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with DB2 in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
* Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  – The location of the database tables.
  – The location of the JDBC driver on the system where the server profile will be created.
  – The user ID and password for authenticating to the database.
* Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
* An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
* Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   ```

```
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database User name[default=] :
   Schema name[default=] :
   Regular pagesize[default=32k] :
   Regular TableSpace[default=WBISPACE] :
   Temporary pagesize[default=32k] :
   Temporary TableSpace[default=WBITEMPSPACE] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :
```

```
(1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-CommonDB for WBI_CommonDB
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-distributed-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating database design files and database scripts (Linux network deployment):

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for deployment environments with DB2 for z/OS:

Use the database design tool to generate a design file that is used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool also generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

```
[info] running DbDesignGenerator in interactive mode...

[info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
help at any time.
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]     WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

    Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

    You are prompted to select the database type that you are configuring; for example:

    ```
    [info] Please pick one of the following [database type(s)] :
    ```

    ```
    (1)DB2-distributed
    (2)DB2-zOS
    (3)Oracle
    (4)SQL Server
    ```

7. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

    For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

    ```
    [info] Please enter the values for the properties in the database objects section.
    Database name[default=CMNDB] :
    Data source user name[default=] :
    Database schema name (SQLID)[default=] :
    Bufferpool of 4K size for tables[default=BP1] :
    Bufferpool for indexes[default=BP2] :
    Bufferpool of 4K size for LOB data[default=BP3] :
    Bufferpool of 8K size for tables[default=BP8K1] :
    Bufferpool of 16K size for tables[default=BP16K1] :
    Bufferpool of 32K size for tables[default=BP32K1] :
    Storage group name[default=] :
    ```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

    The administrative security prompt (if present) refers to the user name and password for the administrative console.

    After you complete the last prompt for the database properties, you see information similar to the following example:

    ```
    [info] You have completed database objects section properties needed for database scripts generation.

    To skip data source properties, enter 's'; or enter anything else to continue :
    ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

    Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

    If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

   Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

------------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]    WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. For any database components that are listed as a parent to another component, configure the parent before the other components because the information provided will be used as default settings for the database component listing the parent. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

Note: For DB2 for z/OS, you must configure each of the remaining components. The following guidelines apply:

- Ensure that you specify the appropriate schema name for each of the remaining database components. Typically, the Process Server, Performance Data Warehouse, and messaging engine components require unique schema names; the remaining components can be assigned the same schema name. You might also be prompted for other values that are unique to the type of component being configured; for example, a prefix for table space names or a value for VSAM catalog names (VCAT).

- If you intend to use a single database for all the system integration bus messaging engines, specify unique prefixes for their table space names because these prefixes will be used to keep the table space name of each messaging engine unique within the database.

- As you configure each component, verify that the values inherited from the master component are appropriate, and amend as required. For example, if you are planning to use more than one database, you might want to amend the database name to reflect the planned distribution of database objects across the DB2 for z/OS subsystem.

- When configuring the Process Server component (**BPM_ProcessServer**), you are asked to specify whether the database is for a Process Center or Process Server:

```
[info] Please pick one of the following [Is this database for a Process Center?(s)] :

(1)false
(2)true
```

If you want to create a Process Center profile or cluster in a network deployment environment, you must choose the **true** option. If you set the option to **false**, you will not be able to access the Process Center console.

If the database is for a Process Server, you must choose the **false** option.

If you selected **bpm.advanced.nd.topology**, after you configure the master component, you must manually configure the **BPM_PerformanceDW** and **BPM_ProcessServer** components. Also edit the configuration values of the remaining components to ensure that the configuration is appropriate for each of the databases you want to create.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
(6)[SibME]      WBI_BPC_ME :  [status = complete]
(7)[SibME]      WBI_CEI_ME :  [status = complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :12

[status] bpm.advanced.nd.topology is not complete with 6 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'catalog' for VCAT is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 4 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.
[ 5 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 6 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'catalog' for VCAT is empty.
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. To generate the database scripts for each component in the directory that you specified earlier, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories. Each of the directories also contains a **createDB2.sh** script, which you can later run together with the database scripts to create the database objects.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files and database scripts for a specific component with DB2 for z/OS in a network deployment environment:

You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
    display help info.

-e db_design_file_name
    edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
    when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
    generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   ```

```
help at any time.
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processsserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processsserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Data source user name[default=] :
   Database schema name (SQLID)[default=] :
   ```

```
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool for indexes[default=BP2] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
   (2)DB2 Universal JDBC Driver Provider on local z/OS
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database Location on z/OS system[default=] :
      Database server host[default=] :
      Database server port[default=] :
      Data source user name[default=] :
      Data source password[default=] :
      DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
      through jdbcDriver Type 4)[default=] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. To generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB

[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Related tasks:

"Creating the messaging engine data stores" on page 380
If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Generating scripts for creating database objects in DB2 for z/OS:

From an installation of IBM Business Process Manager, you can generate database scripts for creating IBM Business Process Manager database objects in a DB2 for z/OS database subsystem. You can use the database design tool to generate the scripts.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Prepare the following information, which provides input to the database scripts that you plan to generate:

- Information about how IBM Business Process Manager and its components are installed.
- Information about the database configuration that you are designing for the DB2 for z/OS subsystem. This information can be supplied by the database administrator or solution architect, and can include details about the required parameters and properties; for example:
  - Database server details
  - Data source details
  - Location of the JDBC driver on the system where the server profile will be created
  - User ID and password for authenticating to the database
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

To generate the database scripts for creating your database objects, you can run the database design tool in silent mode with the **-g** command-line parameter. In this mode, the tool requires input from a database design file that defines the configuration for your DB2 for z/OS database. The database design file must already exist before you generate the database scripts. You can generate the database design file by running the database design tool in interactive mode, or by using a configuration planning spreadsheet:

- You can run the database design tool in interactive mode to generate a database design file. Follow the prompts in the tool to define a DB2 for z/OS database configuration for your stand-alone or network deployment topology.
- The configuration planning spreadsheet is a supplementary artifact that can be downloaded from the IBM Support Portal. The spreadsheet is primarily intended for use with IBM Business Process Manager for z/OS, but can be tailored for use with IBM Business Process Manager on Linux on System z. The configuration planning spreadsheet consists of a number of worksheets that use color coding and comments to assist with data entry, and to help you establish naming conventions. The spreadsheet also includes macros that you can use to generate a database design file, among other files. Before using the spreadsheet, run the database design tool in interactive mode to become familiar with the required configuration options for each of the components.

   You can download the Microsoft Excel spreadsheet from Techdoc WP102075. The data that you require to complete the spreadsheet can span multiple roles, such as systems programmer, product administrator, and database administrator. Therefore, it is advisable to review the spreadsheet in detail and then work with the relevant personnel to establish naming conventions and to complete the entries. After completing the entries, use the **Save** button on the DataBase Design File worksheet to generate the database design file.

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. If necessary, copy the database design file, which defines your DB2 for z/OS configuration, to the workstation where IBM Business Process Manager is installed, to make the file available for use with the **DbDesignGenerator** command.
2. From the command line, change to the IBM Business Process Manager directory where the **DbDesignGenerator** command is stored:

    cd /*install_root*/util/dbUtils

   For example: cd /opt/IBM/WebSphere/AppServer/util/dbUtils
3. Run the **DbDesignGenerator** command using the following syntax:

    DbDesignGenerator.sh -g *db_design_file*

   where *db_design_file* is the fully qualified name of the database design file. For example:

    DbDesignGenerator.sh -g /tmp/DB2-zOS/W8CELL.nd.dbDesign
4. Review the information that is displayed on the screen, checking that no error messages are displayed. For each database component, the database design tool writes information messages to the

screen to indicate that the scripts were generated in the directory specified in the database design file. For example, for the Common database component, you see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

> **Tip:** In the database design file, the directories for the SQL scripts are defined by the *ddl_outDir* variable in each component section. If you want to generate the SQL scripts to a set of different directories, a quick way to do this is to manually update the values of the *ddl_outDir* variables. Then save the database design file, and run the **DbDesignGenerator** command again.

1. Check the specified directory locations to see the database scripts that were generated. Each directory additionally includes a **createDB2.sh** script that you can use to run the SQL.

   To use these scripts to create the IBM Business Process Manager database objects in the DB2 for z/OS subsystem, you must first transfer the scripts to the z/OS system.

2. Use FTP to transfer all the generated database scripts to the z/OS system that contains the installation of DB2. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.

3. Run the **createDB2.sh** script from the z/OS UNIX System Services command environment to create the DB2 for z/OS database objects.

   > **Note:** The **createDB2.sh** script requires execute permissions.

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-zOS-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Setting up databases for Oracle:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

1. Create a table space.

   ```
   SQL> CREATE TABLESPACE [tablespace_name] DATAFILE '[datafile_name]' SIZE 50M AUTOEXTEND ON NEXT 10M
   MAXSIZE UNLIMITED LOGGING;
   ```

2. Create the users. You will specify these users on the Database Configuration - Part 2 page in the Profile Management Tool. The following example assumes you create a BPMDBA user name for the Process Server database, a PDWDBA user name for the Performance Data Warehouse database, and a CMNDBA user name for the Common database:

   ```
   SQL> CREATE USER BPMDBA IDENTIFIED BY [password] DEFAULT TABLESPACE [tablespace_name];
   SQL> CREATE USER PDWDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
   [tablespace_name];
   SQL> CREATE USER CMNDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
   [tablespace_name];
   ```

3. Grant privileges to the users that you specified in the previous step. For example:

   ```
   SQL> GRANT ALL PRIVILEGES TO BPMDBA;
   SQL> GRANT ALL PRIVILEGES TO PDWDBA;
   SQL> GRANT ALL PRIVILEGES TO CMNDBA;
   ```

4. Grant execute privileges on DBMS_LOCK. For example:

   ```
   SQL> GRANT execute on DBMS_LOCK to BPMDBA;
   SQL> GRANT execute on DBMS_LOCK to PDWDBA;
   SQL> GRANT execute on DBMS_LOCK to CMNDBA;
   ```

Creating database design files for Oracle:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with Oracle:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

• Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:

  – The location of the database tables.

  – The location of the JDBC driver on the system where the server profile will be created.

  – The user ID and password for authenticating to the database.

- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

You are prompted to choose a database pattern, as shown in the following example:

```
[info] Please pick one of the following [database pattern(s)] :

(1)bpm.advanced.nd.topology
(2)bpm.advanced.standalone
(3)bpm.standard.nd
(4)bpm.standard.standalone
(5)wesb.nd.topology
(6)wesb.standalone
```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
(2)[BPC]        WBI_BPC : [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer : [status = not complete]
(5)[BSpace]     WBI_BSPACE : [status = not complete]
(6)[SibME]      WBI_BPC_ME : [status = not complete]
(7)[SibME]      WBI_CEI_ME : [status = not complete]
(8)[SibME]      WBI_SCA_APP_ME : [status = not complete]
(9)[SibME]      WBI_SCA_SYS_ME : [status = not complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [status = not complete]
(11)[SibMe]      BPM_ProcessServer_ME : [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

```
[status] WBI_CommonDB is not complete with 1 remaining item(s):
[ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database configuration for the component, type y and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name(SID) [default=CMNDB] :
Database User name[default=] :
Database schema [default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
Database Location(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
(6)[SibME]      WBI_BPC_ME :  [status = complete]
(7)[SibME]      WBI_CEI_ME :  [status = complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]     WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

If you selected **bpm.advanced.nd.topology**, you must manually configure the **BPM_PerformanceDW**, **BPM_ProcessServer**, and the corresponding **SibMe** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :3
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
```

```
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :4
-------------------------------------------------------------------------------

[status] BPM_ProcessServer is not complete with 3 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'databaseUser' for DB_USER is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/Oracle-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.

- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with Oracle in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  – The location of the database tables.
  – The location of the JDBC driver on the system where the server profile will be created.
  – The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.
```

```
-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).
```

```
-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name(SID) [default=CMNDB] :
Database User name[default=] :
Database schema [default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
Database Location(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/Oracle-CommonDB for WBI_CommonDB

[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v Oracle-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating databases and database design files for SQL Server:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

Creating SQL Server databases:

You can create the required databases before you create profiles.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:
   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
      ```

      where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.
   b. To create the Common database:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
      ```

      The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

When you create your database schemas, you must have a user ID with enough authority to create your tables. After the tables are created, the applications must have enough authority to select, insert, update, and delete information in the tables.

The following table shows the database privileges that are required to access the data store.

Table 66.

Database management system	Minimum privilege required to use the data store tables	Additional privilege required to create the data store tables
Microsoft SQL Server	Configure the SQL Server for SQL Server so that authentication can be based on an SQL server login ID and password. The user ID can own the tables or be a member of a group that has sufficient authority to issue TRUNCATE TABLE statements.	The user ID requires the CREATE TABLE statement privilege.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**..

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

   e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

   f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

   On Windows Vista and Windows 7:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

   c. Right-click **Local DTC** and then select **Properties**.

   d. Click the **Security** tab on the **Local DTC Properties** dialog box.

   e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

   f. Click **OK** again to close the Properties dialog box, and then close Component Services.

   g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

   a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

   b. Unzip archive to any folder.

   c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the

`sqljdbc_xa.dll` file in the x86 folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the x64 folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating database design files for SQL Server:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with SQL Server:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.
```

```
-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :
   ```

```
(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
(2)[BPC]          WBI_BPC :  [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = not complete]
(6)[SibME]       WBI_BPC_ME :  [status = not complete]
(7)[SibME]       WBI_CEI_ME :  [status = not complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
(9)[SibME]       WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]       BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]       BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database server host[default=] :
   Database User name[default=] :
   Database schema[default=] :
   System user name(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   ```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server port[default=1433] :

[info] Please pick one of the following {Do you want to use windows authentication for the
databases ? (s)] :

(1) false
(2) true

Data source user name[default=] :
Data source password[default=] :
MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
```

```
(6)[SibME]      WBI_BPC_ME :  [status = complete]
(7)[SibME]      WBI_CEI_ME :  [status = complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]     WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.nd**, after you configure the **BPM_ProcessServer**, you must manually configure the **BPM_PerformanceDW** component for the required database authentication.

    ```
    [info] Please pick one of the following [database component(s)] :

    (1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
    (2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
    (3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
    (4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
    (5)[save and exit]

    Please enter the number for the database component :2
    --------------------------------------------------------------------------------

    [status] BPM_PerformanceDW is not complete with 1 remaining item(s):
    [ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
    required property 'databaseUser' for DB_USER is empty.

    Edit this database component? (y/n) [default=y] :
    ```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/SQLServer-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with SQL Server in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database server host[default=] :
Database User name[default=] :
Database schema[default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

```
[info] Please pick one of the following [database provider(s)] :
```

```
(1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server port[default=1433] :
```

```
[info] Please pick one of the following {Do you want to use windows authentication for the
databases ? (s)] :
```

```
(1) false
(2) true
```

```
Data source user name[default=] :
Data source password[default=] :
MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/SQLServer-CommonDB for WBI_CommonDB
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v SQL Server-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Configuring the network deployment environment using the configureNode command:

To configure a typical network deployment environment, you can use the **configureNode** command instead of using the Profile Management Tool and Deployment Environment wizard or the **manageprofiles** and **wsadmin** commands. This command provides limited customization by using a properties file, and creates a ready-to-use environment. You can also use **configureNode** later to extend the deployment environment.

Restriction: This command is not supported if your database type is DB2 for z/OS.

Important: The **configureNode** command cannot be run twice on one machine without first deleting the profile that was created. To run the **configureNode** command a second time, first delete the profile.

Creating the deployment environment using the configureNode command:

You can use the **configureNode** command to create a typical network deployment environment. The goal of this command is to provide a ready-to-use environment. The only parameters that can be customized are provided in a properties file.

Restriction: This command is not supported if your database type is DB2 for z/OS.

You must have installed the product and created all the databases that are specified in the properties file.

Important: You must have already installed the database software and created the databases (but do not create tables). You must also have created all the users that you specify in the properties file. Make sure the users have the installation privileges listed in Database privileges.

For your SQL Server database server:

- Make sure that the username and schema exist before the configuration is done. The schema value should be the default schema for the user chosen.
- If connections to the database will be made by the current Windows user that the server is running under, the SQL Server must have **Windows authentication mode** or **SQL Server and Windows Authentication mode** enabled, as specified through Microsoft SQL Server Management Studio.

Restriction: Run **configureNode** commands sequentially; do not try to run the command on multiple machines at the same time.

The **configureNode** command uses default ports to create the deployment manager. You cannot customize the ports using this command. The parameters listed in the sample files are the only parameters that can be customized. Make sure that no other profiles that are configured with default ports are started on the same machine.

The **configureNode** command creates the following network deployment topology:
- A single cell environment
- The environment contains the number of cluster members that you specify in the properties file
- The environment uses the Remote Messaging, Remote Support, and Web topology pattern, which includes the following four clusters:
  - Messaging infrastructure cluster
  - Supporting infrastructure cluster
  - Application deployment target cluster
  - Web application cluster

The command performs the following tasks:
- Creates the deployment manager node based on the values in the deployment manager properties file and starts the deployment manager.
- Creates the deployment environment definition.
- Creates a custom node based on the values in the custom node properties file.
- Federates the node and adds the node to the deployment environment.
- Generates the deployment environment.
- Creates the database tables. (You must already have created the databases. See "Before you begin" for instructions.)
- Runs the bootstrap utility to load the Process Server database with system information.
- Configures Business Space and Process Portal on the web application cluster.

The default port is used to create the deployment manager. If a deployment manager is already running on the machine when you run **configureNode**, creating the deployment environment fails. If a deployment manager has already been created but is not running, you must change the port of one of the deployment managers or you might get a port conflict error when you start the other deployment manager.

To create the deployment environment for the first time, complete the following steps:
1. On the machine where you want to create the deployment environment, locate the sample properties file: *install_root*/util/ndUtils/samples/.
2. Copy the sample files and modify the files to reflect your environment. For example, for a deployment manager for IBM BPM Standard for Process Server, choose the `sample_std_ps_dmgr.properties` file.

   For each database that you want to create, copy the database parameters section and specify the database name, user name, password, and schema name. The Process Server database, Performance Data Warehouse database, and Common database are required, and they must have different names.

For more information about the available properties, read the comments in the sample files, or see the **configureNode** command reference and the examples.

Restriction: The parameters listed in the sample files are the only parameters that can be customized.

3. Run the **configureNode** command, passing it the names of the two files you created. The custom node file is optional, but if you do not include it, only the deployment manager is created. For example:

> *install_root***/util/ndUtils/configureNode.sh -dmgr_response** *my_dmgr_response_file.properties* **-response** *node01_response_file.properties*

Note: If you receive the **Failed to perform Security setting update** error, check to ensure that the global IP address has not been appended to **127.0.0.1 localhost** in the hosts file. For example: **127.0.0.1 localhost example.ibm.com**.

You now have a deployment manager, a custom node, and a deployment environment that use the Remote Messaging, Remote Support, and Web topology pattern.

Messages are recorded in the file *install_root*/logs/config/configureNode.log.

Tip: After you have configured a network deployment environment, if you test the data store connection (for example, in the administrative console, on the page **Resources** > **JDBC** > **Data sources**), you get a message saying that the test connection operation failed with the exception `com.ibm.wsspi.runtime.variable.UndefinedVariableException: Undefined Variable WAS_INSTALL_ROOT`. This does not necessarily indicate that there will be a problem accessing the data source at run time. Ensure that the location of your JDBC driver files is accessible to every client that must use the data source, and configure the variable with the full path of that location. Disregard the test connection error unless you are also experiencing trouble connecting to the data store at run time. For additional information, see the WebSphere Application Server documentation about the test connection service.

Important: If you use additional servers with unique ports, WebSphere Application Server does not automatically configure the virtual host for the server. Specifically, WebSphere Application Server does not automatically add the host alias ports to a virtual host. However, you can use the administrative console to add a new host alias for each of the ports that are used by the new server. For more information, see the WebSphere Application Server documentation about configuring virtual hosts.

Related concepts:

⤷ Virtual hosts

Related tasks:

⤷ Configuring virtual hosts

Related reference:

⤷ Test connection service

Extending the deployment environment using the configureNode command:

After you have created a deployment environment using the **configureNode** command, you can run the command at a later time to extend the deployment environment.

You need the following prerequisites before running the **configureNode** command:

- You must have installed the product on the machine where you want to extend the deployment environment.
- The deployment manager must be running.
- You must have created the deployment environment by running the **configureNode** command.

Restriction: Run **configureNode** commands sequentially; do not try to run the command on multiple machines at the same time.

1. On the machine where you want to extend the deployment environment, locate the sample custom node files: *install_root*/util/ndUtils/samples/

2. Copy the sample file that is most similar to the properties file that you need. For example, to extend the deployment environment for IBM BPM Standard for Process Server, choose the sample_std_ps_node.properties file.

   Modify the new custom node file to reflect your environment, including the details of the deployment manager.

   For more information about the available properties, read the comments in the sample files, or see the **configureNode** command reference and the examples.

   Restriction: The parameters listed in the sample files are the only parameters that can be customized.

3. Run the **configureNode** command, passing it the name of the sample file. For example:

   install_root/**util/ndUtils/configureNode.sh -response** *node01_response_file.properties*

   Note: If you receive the **Failed to perform Security setting update** error, check to ensure that the global IP address has not been appended to **127.0.0.1 localhost** in the hosts file. For example: **127.0.0.1 localhost example.ibm.com**.

You have extended the deployment environment.

Messages are recorded in the file *install_root*/logs/config/configureNode.log.

Tip: After you have configured a network deployment environment, if you test the data store connection (for example, in the administrative console, on the page **Resources** > **JDBC** > **Data sources**), you get a message saying that the test connection operation failed with the exception com.ibm.wsspi.runtime.variable.UndefinedVariableException: Undefined Variable WAS_INSTALL_ROOT. This does not necessarily indicate that there will be a problem accessing the data source at run time. Ensure that the location of your JDBC driver files is accessible to every client that must use the data source, and configure the variable with the full path of that location. Disregard the test connection error unless you are also experiencing trouble connecting to the data store at run time. For additional information, see the WebSphere Application Server documentation about the test connection service.

Important: If you use additional servers with unique ports, WebSphere Application Server does not automatically configure the virtual host for the server. Specifically, WebSphere Application Server does not automatically add the host alias ports to a virtual host. However, you can use the administrative console to add a new host alias for each of the ports that are used by the new server. For more information, see the WebSphere Application Server documentation about configuring virtual hosts.

Related concepts:

⇨ Virtual hosts

Related tasks:

⇨ Configuring virtual hosts

Related reference:

⇨ Test connection service

Configuring profiles and creating a network deployment environment:

After you install the product, you must create or augment a deployment manager and one or more custom profiles to define the runtime environment. Before starting the deployment manager, you must have configured the databases that are to be used with IBM Business Process Manager.

Creating or augmenting network deployment profiles:

If you used the **configureNode** command to create and configure your deployment environment, no further configuration is required. Otherwise, you must create or augment a deployment manager profile and one or more custom profiles before creating the deployment environment. Using profiles, you can have more than one runtime environment on a system, without having to install multiple copies of IBM Business Process Manager.

Configuring a network deployment environment with a DB2 database server:

You can configure a network deployment environment for IBM Business Process Manager using a DB2 database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
 1. Use one of the following methods to start the Profile Management Tool.
    - Start the tool from the First steps console.
    - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
    - Run the command `install_root/bin/ProfileManagement/pmt.sh`.
 2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
 3. On the **Profiles** tab, click **Create**.

    The Environment Selection page opens in a separate window.
 4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
 5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

• Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with a DB2 database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

• Specify a database design file to be used for the database configuration.

• Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).

• Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   • Start the tool from the First steps console.
   • Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   • Run the command *install_root*/bin/ProfileManagement/pmt.sh.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the `startServer` or `startManager` commands. For example, if you configure a server as a Linux service and issue the `startServer` command, the `wasservice` command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
        - Select **Production** if the server is to be used in a production capacity.
        - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
        - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create a deployment manager profile.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   ```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with a DB2 database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
   - Run the command `install_root`/bin/ProfileManagement/pmt.sh.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

The **Advanced** option lets you specify your own configuration values for a profile.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with a DB2 database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.

- Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
- Run the command *install_root*/bin/ProfileManagement/pmt.sh.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

  Click **Next**.
11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.
12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.
13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12`

file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.

    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

16. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

   If you selected **Typical** profile creation, skip to the Profile Summary step.
17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.
1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.
4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the `install_root`/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > `Profile Management Tool`.
   - Run the command `install_root/bin/ProfileManagement/pmt.sh`.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
6. If you selected **Typical** profile creation, skip to the Federation step.
7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

- Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    * `key.p12`: Contains the default personal certificate.
    * `trust.p12`: Contains the signer certificate from the default root certificate.
    * `root-key.p12`: Contains the root signing certificate.
    * `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    * `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    * `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    * The ports are assigned to a profile created under an installation performed by the current user.
    * The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   `chmod 644 BPM_Custom.response`

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   `manageprofiles.sh -create -templatePath` *install_root*`/profileTemplates/BPM/managed.procctr`

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   `manageprofiles.sh -response` *myResponseFile*

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root`/java/bin/java -Duser.language=`*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root`/java/bin/java -Duser.language=de` *install_root*`/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.

2. Use one of the following methods to start the Profile Management Tool.

   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > `Profile Management Tool`.
   - Run the command *install_root*`/bin/ProfileManagement/pmt.sh`.

3. Shut down any servers associated with a profile you plan to augment.

4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.
11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

Important:

Select **Federate this node later** if any one of the following situations is true:
- You plan to use this custom node as a migration target.
- Another profile is being federated. (Node federation must be serialized.)
- The deployment manager is not running or you are not sure if it is running.
- The deployment manager has the SOAP connector disabled
- The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
- The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
- The deployment manager does not have a JMX administrative port enabled.
- The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

Processing associated with federating the node as part of custom profile creation:
- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:
   ```
   chmod 644 BPM_Custom.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

  profile_root/bin/startManager.sh
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

   profile_root/bin

2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

   `./addNode.sh deployment_manager_host deployment_manager_SOAP_port`

   Run the following command from the command line if security is enabled:

   `./addNode.sh deployment_manager_host deployment_manager_SOAP_port -username`
   `userID_for_authentication -password password_for_authentication`

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

   ```
   ADMU0003I: Node DMNDID2Node03 has been successfully federated.
   ```

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

⇥ Add managed nodes (WebSphere Application Server)

Configuring a network deployment environment with a DB2 for z/OS database server:

You can configure a network deployment environment for IBM Business Process Manager using a DB2 Universal Database for z/OS database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
   - Run the command `install_root/bin/ProfileManagement/pmt.sh`.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
5. On the Profile Creation Options page, choose **Advanced** and click **Next**.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The

password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

You must specify a user name under which the service runs.

To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with a DB2 for z/OS database server using the Profile Management Tool on Linux:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   - Run the command *install_root*/bin/ProfileManagement/pmt.sh.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for

commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

    d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

    e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
    - In the **Path** field, enter the directory path to the existing certificate.
    - In the **Password** field, enter the password for the certificate
    - In the **Keystore type** field, select the keystore type for the certificate you are importing.
    - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
    - Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.

- **default-signers.p12**: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- **deleted.p12**: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- **ltpa.jceks**: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

You must specify a user name under which the service runs.

To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. On the Process Server Configuration page, set the values for the following parameters.
- **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

  You can click **Test Connection** to check the connection to the Process Center.
15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.
- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.
2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.
3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with a DB2 for z/OS database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
   - Run the command `install_root/bin/ProfileManagement/pmt.sh`.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

8. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

9. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

10. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

11. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

12. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.

- ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

13. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

14. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with a DB2 for z/OS database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
   - Run the command `install_root/bin/ProfileManagement/pmt.sh`.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
8. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

9. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

10. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

11. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

12. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.

- default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

13. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

14. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

15. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.
      - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.

Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions

are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

    Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

    The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

    - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
    - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
    - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
    - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
    - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
    - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
    - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
    - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

    Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

    ```
    chmod 644 BPM_Dmgr.response
    ```

    Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

    ```
    manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
    -profileName MyProfileName
    ```

    If you have created a response file, specify the **-response** parameter without any other parameters. For example:

    ```
    manageprofiles.sh -response myResponseFile
    ```

    The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
  2. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
     - Run the command `install_root/bin/ProfileManagement/pmt.sh`.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
  6. If you selected **Typical** profile creation, skip to the Federation step.
  7. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.
     c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        - In the **Path** field, enter the directory path to the existing certificate.
        - In the **Password** field, enter the password for the certificate
        - In the **Keystore type** field, select the keystore type for the certificate you are importing.
        - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        - Click **Next** to display the Security Certificate (Part 2) page

        When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.
11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the java.security file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - key.p12: Contains the default personal certificate.
    - trust.p12: Contains the signer certificate from the default root certificate.
    - root-key.p12: Contains the root signing certificate.
    - default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.
12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.

- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.

2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   - Run the command *install_root*/bin/ProfileManagement/pmt.sh.
3. Shut down any servers associated with a profile you plan to augment.
4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

  Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

    Important:

    Select **Federate this node later** if any one of the following situations is true:
    - You plan to use this custom node as a migration target.
    - Another profile is being federated. (Node federation must be serialized.)
    - The deployment manager is not running or you are not sure if it is running.
    - The deployment manager has the SOAP connector disabled
    - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
    - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
    - The deployment manager does not have a JMX administrative port enabled.
    - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

    Processing associated with federating the node as part of custom profile creation:
    - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
    - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root`/properties/portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the `manageprofiles` command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the `install_root`/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the `install_root`/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the `manageprofiles` command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the `install_dir`/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the `install_root`/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.

- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    profile_root/bin/startManager.sh
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

    profile_root/bin

2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

   ```
   ./addNode.sh deployment_manager_host deployment_manager_SOAP_port
   ```

   Run the following command from the command line if security is enabled:

   ```
   ./addNode.sh deployment_manager_host deployment_manager_SOAP_port -username
   userID_for_authentication -password password_for_authentication
   ```

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

   ```
   ADMU0003I: Node DMNDID2Node03 has been successfully federated.
   ```

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

▶ Add managed nodes (WebSphere Application Server)

Creating and configuring DB2 for z/OS databases after network deployment profile creation:

After creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

DB2 for z/OS authorization prerequisites:

Before you create the IBM Business Process Manager databases, you must ensure that the required authorizations are granted for your DB2 for z/OS version. Also ensure that the appropriate storage groups and buffer pools are assigned, and configure clustering if necessary.

User authorization requirements for DB2 for z/OS

Ask your DB2 for z/OS system administrator to check the authorizations that have been granted to ensure that you have not granted more authority than necessary to any user ID. It can be tempting to grant DB2 SYSADM authority to the JCA authentication aliases in order to avoid possible problems with DB2 security during the configuration. The WebSphere administrator ID should not require more than DBADM authority to define the IBM Business Process Manager databases.

The following storage group, database, and buffer pool GRANT permissions are provided by default, for the WebSphere administrator identified as #DB_USER#. These permissions are available in the createDatabase.sql database script that is generated by the database design tool:

```
GRANT USE OF STOGROUP #STOGRP# TO #DB_USER# WITH GRANT OPTION;
GRANT DBADM ON DATABASE #DB_NAME# TO #DB_USER#;
GRANT USE OF ALL BUFFERPOOLS TO #DB_USER#;
```

The following GRANT permission might be required to permit the #DB_USER# user to create sequences and stored procedures with a schema qualifier of #SCHEMA#:

```
GRANT CREATEIN,ALTERIN,DROPIN ON SCHEMA #SCHEMA# TO #DB_USER# WITH GRANT OPTION;
```

The following permissions are also required:

```
GRANT CREATE ON COLLECTION #SCHEMA# TO #DB_USER#;
GRANT BINDADD TO #DB_USER#;
```

Authorization requirements for views on DB2 for z/OS V10

If you are planning to use DB2 for z/OS V10, additional permissions are required for views in the
database:

- Before you run the SQL to define views, you might need to set the DBACRVW subsystem parameter to
  YES.

  This setting ensures that WebSphere administrator IDs with DBADM authority on database
  #*DB_NAME*# can create views for other user IDs.

- On DB2 for z/OS V10, the WebSphere administrator ID must be specifically granted access to views,
  because access is not implicitly granted to users with DBADM authority on the database. Individual
  GRANT statements or a Resource Access Control Facility (RACF) group can be used to provide access
  to views in DB2 for z/OS V10. Ask your DB2 for z/OS administrator to provide this access by using
  either of the following methods:

  – Issue an explicit GRANT statement for each view. For example, the following sample GRANT
    statements can be issued for user ID WSADMIN:

    ```
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_SERVICE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.APPLICATION_COMP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG_B TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY_LDESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_CPROP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_DESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.EVENT TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.MIGRATION_FRONT TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_INSTANCE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPLATE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPL_ATTR TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROPERTY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROP_TEMPL TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.SHARED_WORK_ITEM TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_CPROP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_DESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_HISTORY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_DIST_TARGET TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_LDESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_ITEM TO WSADMIN WITH GRANT OPTION;
    ```

  – Define a RACF group that corresponds to the schema name for the views, and connect the
    WebSphere administrator ID to the RACF group. For example, you can define a RACF group named
    S1CELL, and connect user WSADMIN to it, as follows:

    ```
    INFORMATION FOR GROUP S1CELL
     SUPERIOR GROUP=ZWPS    OWNER=ZWPS    CREATED=07.144
     INSTALLATION DATA=OWNED BY EMP SERIAL 009179, SITE ABCUK
     NO MODEL DATA SET
     TERMUACC
     NO SUBGROUPS
    ```

```
   USER(S)=  ACCESS=  ACCESS COUNT=  UNIVERSAL ACCESS=
     WSADMIN   CONNECT   000000     NONE
       CONNECT ATTRIBUTES=NONE
       REVOKE DATE=NONE     RESUME DATE=NONE
```

Using the configuration planning spreadsheet to define authorizations

If you have downloaded the configuration planning spreadsheet for use, you can alternatively use this spreadsheet to generate the GRANT permissions that are required for users and for DB2 for z/OS V10 views (as identified in the preceding sections in this topic). The configuration planning spreadsheet is available from Techdoc WP102075 in the IBM Support Portal.

The Database worksheet in the spreadsheet lists a set of sample SQL statements that can be used to create the databases and storage groups. Additionally, the GRANT permissions that are required to authorize the WebSphere administrator and to provide access to DB2 for z/OS V10 database tables are provided. When you specify the user and database object names on the BPMVariables worksheet of the spreadsheet, these values are propagated to the Database worksheet, and are used to complete the CREATE and GRANT statements with the appropriate values.

Ask your DB2 for z/OS system administrator to use the relevant CREATE statements to create the databases and storage groups, and to use the GRANT statements to authorize the WebSphere administrator. For more information about using the artifacts generated from the spreadsheet, see the accompanying PDF document in the Techdoc.

Storage group assignments and buffer pool usage

Ask your DB2 for z/OS system administrator to check the storage group assignments and buffer pool usage. Incorrect storage group assignment and buffer pool usage might not show up as an error message in a log, but might cause problems later. It is better to resolve such problems now rather than when the system has been handed over for use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.

Clustering requirements

If you intend to configure clustering, your DB2 for z/OS system must be running in data-sharing mode.

Related tasks:

"Creating database design files and database scripts (AIX stand-alone)" on page 493
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (AIX network deployment)" on page 614
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux stand-alone)" on page 155
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux network deployment)" on page 277
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris stand-alone)" on page 826
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris network deployment)" on page 949
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Windows stand-alone)" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

"Creating database design files and database scripts (Windows network deployment)" on page 1304
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating databases in the DB2 for z/OS subsystem:

When you use the database design tool (**DbDesignGenerator**) to define your database configuration, you can generate the database scripts that are required for creating the databases for the IBM Business Process Manager components.

You can use various tools to run these database scripts:

- When you run the database design tool to generate the database scripts, the **createDB2.sh** script is also generated. You can use **createDB2.sh** to run the database scripts.
- You can use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to run the database scripts.

Choosing which tool to use

You can choose one tool over another based on experience and familiarity, or personal preference. Your organization might also have implemented standards or conventions for the tools used to create DB2 for z/OS objects, particularly in a production environment.

Considerations for choosing the createDB2.sh script

- **createDB2.sh** can create all your database objects in one simple execution of the tool, so it is a good choice if this is your first server implementation.
- **createDB2.sh** runs the database scripts that the database design tool (**DbDesignGenerator**) generates.
- **createDB2.sh** runs the SQL for each component in the correct sequence.
- **createDB2.sh** creates database objects according to a naming convention that you define.
- **createDB2.sh** organizes the layout of database objects across DB2 for z/OS databases.
- **createDB2.sh** issues GRANT permissions to database, storage group, and buffer pool objects.
- **createDB2.sh** automatically completes customization of the service integration bus Data Definition Language (DDL).
- **createDB2.sh** runs in a UNIX System Services environment.
- **createDB2.sh** produces an audit trail of the objects that it creates.

Considerations for choosing other tools

- You might prefer to use the DB2 command line processor to run the SQL statements in the UNIX Systems Services environment. You must first run the **createDB2.sh** script in a mode that bypasses execution of the SQL statements and instead consolidates them into two `.sql` files. You can then run these files by using the command line processor.
- There is no restriction on the naming or organization conventions that apply to the database objects other than the standard database subsystem restrictions.
- Some tools can be run from a z/OS environment.
- The tools can produce an audit trail of the DB2 database commands that have been issued.

Related tasks:

"Creating database design files and database scripts (Linux network deployment)" on page 277
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Configuring the DB2 command line processor:

Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

Ensure that a properties file, for example, `clp.properties`, exists for the DB2 command line processor. If required, you can create your own properties file by using the sample properties file that is available in the directory where the command line processor is installed. For more information, see your DB2 for z/OS documentation.

Complete the following configuration steps in the z/OS UNIX System Services environment from which the **createDB2.sh** script will be run:

1. Configure the DB2 command line processor for each user ID that will work with DB2 for z/OS from the command line. You can update the personal or shared user profiles as follows:
   - Modify the CLASSPATH environment variable to include the `clp.jar` file.
   - Use the CLPPROPERTIESFILE environment variable to define the fully qualified name of the properties file for the command line processor.
   - Define the **db2** command as an alias for the command that starts the command line processor.
   - Specify the `DB2JccConfiguration.properties` file that defines the JDBC properties to be applied to the command line processor.

   You can use the following syntax to add the required entries to the `.profile` or `/etc/profile` file:

```
export CLPHOME=clp_install_dir
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=clp_properties_file_path
alias db2="java -Ddb2.jcc.propertiesFile=
/file_path/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

For example:

```
export CLPHOME=/shared/db2910_base
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=/wasv8config/clp.properties
alias db2="java -Ddb2.jcc.propertiesFile=
/wasv8config/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

2. In the properties file for the command line processor, define alias names that can be used to connect to the DB2 for z/OS server. An alias name definition includes the following entities:

   - A URL that specifies the domain name or IP address of the database server, the port on which the server listens, the DB2 location name defined during installation, and the property for the JDBC connection. The URL can take the form: *server:port/database* property=*value*. The port and property values are optional, and the DB2 location name must be specified in uppercase characters.
   - A user ID and an associated password that can be used to connect to the DB2 server. This user ID should correspond to the user ID (with SYSADM authority) that the DB2 system administrator uses to run the **createDB2.sh** script.

   You can add the required alias name entries to the properties file by using the following syntax:

   ```
   DB2ALIASNAME=URL,user_ID,password
   ```

   For example:

   ```
   DSNXWBD=localhost:9446/DSNXWBD,SYSADM1,SYSPWRD1
   ```

   Tip: When you define a *DB2ALIASNAME* value in the properties file, ensure that the correct connection details are specified to avoid connecting to the wrong database and inadvertently overwriting its contents.

3. Configure the DB2 DBACRVW subsystem parameter to enable user IDs with DBADM authority on a database to perform the following tasks for other user IDs: create views on tables in the database, create aliases for tables, and create materialized query tables. You can use the installation Command List (CLIST) to access the DSNTIPP ISPF panel and update the DBADM CREATE AUTH field to set DB2 ZPARM DBACRVW=YES.

Use the **createDB2.sh** script to either run the SQL to create the database objects for a specified database, or to consolidate the SQL statements into two .sql files that you can run later using other database tools.

Related tasks:

"Creating DB2 for z/OS database objects using the createDB2.sh script"
After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 376
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating DB2 for z/OS database objects using the createDB2.sh script:

After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

You can also use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to create and populate databases.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a network deployment environment, you might define two DB2 for z/OS databases, where one database is used for the Common database component, which is cell-scoped, and another database is used for all the other components, which are cluster-scoped.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

The number of databases that you create for your IBM Business Process Manager installation can depend on your topology, and how you want to distribute your database objects across the DB2 for z/OS subsystem. Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created. For example:

- To create a single database, you can run **createDB2.sh** once from a directory that contains all the database scripts that were generated for all the IBM Business Process Manager components.
- To create multiple databases at the cell level and cluster levels, you can run **createDB2.sh** once from each directory that contains the database scripts required to create the database objects for the cell and clusters.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   cd /u/work/S4CELLDB

2. Run the **createDB2.sh** script by using the following syntax:

   createDB2.sh -DBAlias *alias_name* -DBName *database_name* -DBSto *storage_group_name* -DBCreate
   -DBVCat *volume_catalog* -DBUser *DB_user_ID* -RunSQL

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

-DBName
> Specifies the name of the database to be created.

-DBSto
> Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

-DBCreate
> Creates the database.

-DBVCat
> Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser
> Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

-RunSQL
> Runs the SQL statements that create the database objects.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN -RunSQL
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

3. Review the messages that are displayed in the console, checking that no error messages are displayed.

   Tip: The first time that you run **createDB2.sh** to create the database, you see a few messages because the script first attempts to drop the database, which at that stage does not yet exist. These messages can be ignored, and subsequent invocations of **createDB2.sh** for the same database will not produce such messages.

   When the script has finished running, you can also review the z_output.txt file, which provides an audit trail of the operations completed and status messages. This file is stored in the directory from which you ran the **createDB2.sh** script.

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 373
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Linux network deployment)" on page 277
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using the DB2 command line processor:

When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

You can also run these .sql files by using any other database tool of your choice, such as SPUFI or DSNTEP2.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a network deployment environment, you might define two DB2 for z/OS databases, where one database is used for the Common database component, which is cell-scoped, and another database is used for all the other components, which are cluster-scoped.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   ```
   cd /u/work/S4CELLDB
   ```

2. Run the **createDB2.sh** script by using the following syntax:

   ```
   createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate
   -DBVCat volume_catalog -DBUser DB_user_ID
   ```

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
   Specifies the name of the database to be created.

   -DBSto
   Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
   Creates the database.

-DBVCat

Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser

Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

Tip: By omitting the **-RunSQL** parameter, you bypass the execution of the SQL statements that create the database objects, and instead consolidate the statements into two `.sql` files.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

The `z_schema.sql` and `z_schemaProc.sql` files, which hold the consolidated SQL statements, are generated in the directory from which you ran the **createDB2.sh** script. The `z_schemaProc.sql` file contains SQL statements for stored procedures, and is generated in addition to `z_schema.sql` because stored procedures require the "at" sign (@) as a statement termination character when running the command line processor.

3. Run the DB2 command line processor in batch mode to execute the SQL in the `z_schema.sql` file:

   ```
   db2 -f /createDB2.sh_path/z_schema.sql
   ```

   For example:

   ```
   db2 -f /u/work/S4CELLDB/z_schema.sql
   ```
   The command line processor reads the data in the file, and processes the commands in the file consecutively.

4. Run the DB2 command line processor again to execute the SQL in the `z_schemaProc.sql` file, and additionally use the **-td** parameter to define @ as the statement termination character:

   ```
   db2 -td@ -f /createDB2.sh_path/z_schemaProc.sql
   ```

   For example:

   ```
   db2 -td@ -f /u/work/S4CELLDB/z_schemaProc.sql
   ```

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 373
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Linux network deployment)" on page 277
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using SPUFI or DSNTEP2:

You can use tools such as SPUFI or DSNTEP2 to run the database scripts that are used to create the DB2 for z/OS database objects for your configuration.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.

- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, which are required to create the database, into that directory.

  Tip: The generated scripts that you use to create the database objects can either be in ASCII or EBCDIC format. Typically, the generated `.sql` files are in ASCII format, and the equivalent `.ddl` files are in EBCDIC format.
- Use FTP to transfer the database scripts to the z/OS system that contains the DB2 for z/OS installation.
- Create or augment the profile.

You can create the database objects by using the tool of your choice. For example:

SPUFI A utility that runs SQL scripts from z/OS. SPUFI uses EBCDIC input.

DSNTEP2
> A sample dynamic SQL program provided with the DB2 for z/OS product.

1. Assign the appropriate read permissions to the SQL scripts; for example:

   ```
   chmod 644 createTable_AppScheduler.sql
   ```
2. If the tool that you want to use to view, edit, and run the scripts requires the scripts to be in EBCDIC format, rather than ASCII format, use the **iconv** command to convert the files to EBCDIC. For example:

   ```
   iconv -t IBM-1047 -f ISO8859-1 createTable_AppScheduler.sql >
   createTable_AppScheduler_EBCDIC.sql
   ```

   Important: After converting from ASCII to EBCDIC, check that no SQL statements exceed 71 characters in length. Longer lines will lead to line truncation and invalid statements when copying to fixed-width MVS data sets.

   Tip: If you have converted the files from ASCII format to EBCDIC, but need to run the files in ASCII format, you can also use **iconv** to convert the files back to ASCII. For example:

   ```
   iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >
   createTable_AppScheduler.sql
   ```
3. Edit the values in the `createDatabase.sql` and `dropDatabase.sql` files according to your requirements. The following symbolic variables need to be updated:

   ```
   @STOGRP@     = DB2 Storage group name
   @DB_NAME@    = DB2 Database name
   @SCHEMA@     = DB2 SQLID (Schema Qualifier)
   @BPTABLE4K@  = Buffer Pool of 4k Size
   @BPINDEX@    = Buffer Pool Index
   @VOLUMES@    = DB2 comma separated list of volume-ids
   @VCAT@       = DB2 integrated catalog facility name
   @DB_USER@    = The user ID which will be used to create the database objects
   ```
4. To create database objects outside of the z/OS UNIX environment by using SPUFI or DSNTEP2, copy the customized database scripts from z/OS UNIX to a partitioned data set.
5. Run the customized scripts by using the tool of your choice.

   Tip: If you previously ran the **createDB2.sh** script and chose to bypass execution of the SQL scripts, you can also run the consolidated SQL files (`z_schema.sql` and `z_schemaProc.sql`), which were generated.
6. Verify that the database tables are created successfully with no errors by inspecting the output.

Related tasks:

"Creating database design files and database scripts (Linux network deployment)" on page 277
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 376
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating the messaging engine data stores:

If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Before you create and run the database scripts:
- Create a cluster.
- Decide which service integration bus components you want to create in your network deployment configuration.

You must create and populate a messaging engine data source for each of the following components that you configure:
- Service Component Architecture system bus
- Service Component Architecture application bus
- Process Server
- Performance Data Warehouse
- Common Event Infrastructure

You can create all the database objects in one or more databases in the DB2 for z/OS subsystem. Take note of the following considerations:
- All messaging engines use the same table names. Therefore, the tables for each messaging engine require a unique schema qualifier.
- When you use the database design tool to define the database configuration for each messaging engine, you can specify a prefix for table space names:
  - If you intend to use a single database for all the messaging engines, specify a unique table space prefix for each messaging engine to make its table space name unique within the database.
  - If you intend to use a separate database for each messaging engine, the table space prefixes that you specify for the messaging engines can be identical or unique.

1. For each messaging engine, complete the following steps to generate the required database scripts:
   a. Run the database design tool (**DbDesignGenerator**) from the *install_root*/util/dbUtils directory.
   b. Select option **(2)Create a database design for a single component**, and then select the appropriate option for the messaging engine.
   c. Complete the remaining prompts in the tool to define the database configuration and to generate the scripts.

   Tip: As an alternative to running the database design tool multiple times to generate scripts for each of the messaging engines, you can run the tool once using option **(1)Create a database design for Standalone profile or Deployment Environment**. With this option, you can define the database configuration and generate database scripts for the following components in a single pass through the

tool: Common database, Business Process Choreographer, Performance Data Warehouse, Process Server, Business Space, and the six messaging engines.

2. Run the generated DDL scripts using the tool of your choice.

The messaging engine data stores are created.

Related tasks:

"Creating database design files and database scripts for a specific component with DB2 for z/OS in a network deployment environment" on page 283
You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

"Creating database design files and database scripts for deployment environments with DB2 for z/OS" on page 277
Use the database design tool to generate a design file that is used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool also generates database scripts that you can use to create your database tables.

Granting table privileges to the JCA authentication alias user ID:

If the schema name you are using is not the same as the JCA authentication alias user ID, you must grant a subset of DB2 for z/OS privileges to the JCA authentication alias user ID.

The database scripts for the service integration bus (SIB) contain commented GRANT commands that you can use as a basis for granting access to the SIB tables. However, the other IBM Business Process Manager components do not supply GRANT statements.

Use a schema name that is different from the JCA authentication alias to prevent the alias user ID from having the authority to drop tables. (The authority to drop tables is implicitly granted to the creator, that is, the schema.) Note that it does not make sense to grant a privilege like DBADM to the JCA authentication alias user ID because DBADM also has the ability to drop tables.

If you want IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the database scripts and editing them to construct GRANT commands from the CREATE commands. You can create GRANT commands like the one shown in the following example:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

where *userid/sqlid* is the JCA authentication alias user ID.

Note: Typically, the creator of a database object has implicit use of that object without requiring additional GRANT permissions. However, for DB2 for z/OS Version 10, additional GRANT permissions might be required for views because access to views is not implicitly granted to the creator.

Setting the correct schema name for the messaging engines:

To ensure that the service integration bus (SIB) messaging engines can access the appropriate DB2 for z/OS tables, the correct schema name must be set for the messaging engines. You can use the administrative console to change the schema names.

Start the server.

1. Log in to the administrative console.

2. Navigate to **Service Integration** > **Buses**.

3. For each messaging engine:
   a. Select **Messaging engines**, and then click the name that is displayed.

b. Click **Message store**.

   c. Change the value of **Schema name** to the name used when creating the DB2 for z/OS tables for this messaging engine.

   d. Click **Apply**.

   e. Save your configuration changes.

4. Verify that the messaging engines can be started:

   a. Log out of the administrative console.

   b. Stop, and then restart the server.

   c. Look in the output of the server log for successful SIB messaging engine startup messages. For example:

   ```
   BBOO0222I: "BusName"
   CWSID0016I: Messaging engine MessagingEngineName is in state Started.
   ```

Configuring a network deployment environment with an Oracle database server:

You can configure a network deployment environment for IBM Business Process Manager using an Oracle database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
     - Run the command *install_root*/bin/ProfileManagement/pmt.sh.

  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

  3. On the **Profiles** tab, click **Create**.

The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root/properties/portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
     - Run the command *install_root*/bin/ProfileManagement/pmt.sh.
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

– Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

* `key.p12`: Contains the default personal certificate.
* `trust.p12`: Contains the signer certificate from the default root certificate.
* `root-key.p12`: Contains the root signing certificate.
* `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
* `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
* `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

* The ports are assigned to a profile created under an installation performed by the current user.
* The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:
   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:
   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   ```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with an Oracle database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.

     - Start the tool from the First steps console.
     - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
     - Run the command `install_root`/bin/ProfileManagement/pmt.sh.

  2. Shut down any servers associated with a profile you plan to augment.

  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

The **Advanced** option lets you specify your own configuration values for a profile.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.
11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  – In the **Path** field, enter the directory path to the existing certificate.
  – In the **Password** field, enter the password for the certificate
  – In the **Keystore type** field, select the keystore type for the certificate you are importing.
  – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  – Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

   If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

   You must specify a user name under which the service runs.

   To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with an Oracle database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.

- Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
- Run the command *install_root*/bin/ProfileManagement/pmt.sh.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.
12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.
13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12`

file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.

    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

16. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

    Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
    - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
    - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

    Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.
4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the `install_root`/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.

2. Use one of the following methods to start the Profile Management Tool.

   - Start the tool from the First steps console.
   - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > `Profile Management Tool`.
   - Run the command `install_root/bin/ProfileManagement/pmt.sh`.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

6. If you selected **Typical** profile creation, skip to the Federation step.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

– Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

   When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

   * `key.p12`: Contains the default personal certificate.
   * `trust.p12`: Contains the signer certificate from the default root certificate.
   * `root-key.p12`: Contains the root signing certificate.
   * `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
   * `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
   * `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

   These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

   Ports are recognized as being in use if the following conditions are satisfied:

   * The ports are assigned to a profile created under an installation performed by the current user.
   * The ports are currently in use.

   Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

   If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

   profile_root/properties/portdef.prop

   Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the `-templatePath` option).

    Templates for each profile are located in the `install_root`/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
    - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
    - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the `manageprofiles` parameters topic.

3. To use the `-responseFile` parameter, look at the provided sample response files and create a response file that is specific to your environment.

    Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

    The samples are located in the `install_root`/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
    - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
    - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
    - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
    - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
    - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
    - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
    - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
    - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

    Copy one of the sample response files to your working directory. Use the `chmod` command to assign the appropriate permissions to your new copy of the response file. For example:
    ```
    chmod 644 BPM_Custom.response
    ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
  2. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
     - Run the command `install_root`/bin/ProfileManagement/pmt.sh.
  3. Shut down any servers associated with a profile you plan to augment.
  4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.
11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

Important:

Select **Federate this node later** if any one of the following situations is true:
- You plan to use this custom node as a migration target.
- Another profile is being federated. (Node federation must be serialized.)
- The deployment manager is not running or you are not sure if it is running.
- The deployment manager has the SOAP connector disabled
- The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
- The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
- The deployment manager does not have a JMX administrative port enabled.
- The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

Processing associated with federating the node as part of custom profile creation:
- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        - In the **Path** field, enter the directory path to the existing certificate.
        - In the **Password** field, enter the password for the certificate
        - In the **Keystore type** field, select the keystore type for the certificate you are importing.
        - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Custom.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:

- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    profile_root/bin/startManager.sh

- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

    profile_root/bin

2. Run the **addNode** command.

    Run the following command from the command line if security is not enabled:

    `./addNode.sh deployment_manager_host deployment_manager_SOAP_port`

    Run the following command from the command line if security is enabled:

    `./addNode.sh deployment_manager_host deployment_manager_SOAP_port -username userID_for_authentication -password password_for_authentication`

    An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

    ```
    ADMU0003I: Node DMNDID2Node03 has been successfully federated.
    ```

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

↪ Add managed nodes (WebSphere Application Server)

Configuring a network deployment environment with an SQL Server database server:

You can configure a network deployment environment for IBM Business Process Manager using a Microsoft SQL Server database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles with an SQL Server database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > Profile Management Tool.
     - Run the command `install_root`/bin/ProfileManagement/pmt.sh.
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.
     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with an SQL Server database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

 1. Use one of the following methods to start the Profile Management Tool.
    - Start the tool from the First steps console.
    - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
    - Run the command *install_root*/bin/ProfileManagement/pmt.sh.

 2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

 3. On the **Profiles** tab, click **Create**.

    The Environment Selection page opens in a separate window.

 4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the `startServer` or `startManager` commands. For example, if you configure a server as a Linux service and issue the `startServer` command, the `wasservice` command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   • dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.

   • dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   • PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.

   • PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.

   • PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.

   • PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.

   • PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.

   • PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.

   • PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.

   • PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   ```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with an SQL Server database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.

     - Start the tool from the First steps console.
     - Click `Linux_operating_system_menus_to_access_programs` > IBM > `your_product` > `Profile Management Tool`.
     - Run the command `install_root/bin/ProfileManagement/pmt.sh`.

  2. Shut down any servers associated with a profile you plan to augment.

  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

The **Advanced** option lets you specify your own configuration values for a profile.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.
11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with an SQL Server database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.

- Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > `Profile Management Tool`.
- Run the command *install_root*/`bin/ProfileManagement/pmt.sh`.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/`profiles/`*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

  Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    • The ports are assigned to a profile created under an installation performed by the current user.

    • The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have root privileges, skip to the next step. If you have root privileges, on the Service Definition page, indicate whether to use a Linux service to run IBM Business Process Manager. By default, IBM Business Process Manager is not selected to run as a Linux service.

    If the profile is configured as a Linux service, IBM Business Process Manager attempts to start Linux services for processes that are started by the **startServer** or **startManager** commands. For example, if you configure a server as a Linux service and issue the **startServer** command, the **wasservice** command starts the defined services.

    You must specify a user name under which the service runs.

    To delete a Linux service, the user must be the root user or have the required privileges for deleting the service. Otherwise, a removal script is created that the root user can run to delete the service on behalf of the user.

16. On the Process Server Configuration page, set the values for the following parameters.

    • **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    • Environment **Type**: Select how the Process Server is used:

       – Select **Production** if the server is to be used in a production capacity.

       – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

       – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Profile Summary step.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the `manageprofiles` command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.
5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

   ```
   manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   -profileName MyProfileName
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

* Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
* Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   * Start the tool from the First steps console.
   * Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   * Run the command *install_root*/bin/ProfileManagement/pmt.sh.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
6. If you selected **Typical** profile creation, skip to the Federation step.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  – In the **Path** field, enter the directory path to the existing certificate.
  – In the **Password** field, enter the password for the certificate
  – In the **Keystore type** field, select the keystore type for the certificate you are importing.
  – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  – Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

> Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the `-templatePath` option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.
2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the `manageprofiles` parameters topic.
3. To use the `-responseFile` parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.

- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   - Run the command *install_root*/bin/ProfileManagement/pmt.sh.
3. Shut down any servers associated with a profile you plan to augment.

4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

8. If you selected **Typical** profile creation, skip to the Federation step.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

    Important:

    Select **Federate this node later** if any one of the following situations is true:
    - You plan to use this custom node as a migration target.
    - Another profile is being federated. (Node federation must be serialized.)
    - The deployment manager is not running or you are not sure if it is running.
    - The deployment manager has the SOAP connector disabled
    - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
    - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
    - The deployment manager does not have a JMX administrative port enabled.
    - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

    Processing associated with federating the node as part of custom profile creation:
    - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
    - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        – In the **Path** field, enter the directory path to the existing certificate.
        – In the **Password** field, enter the password for the certificate
        – In the **Keystore type** field, select the keystore type for the certificate you are importing.
        – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.
13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root

signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root/properties/portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.

- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    profile_root/bin/startManager.sh
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

    profile_root/bin
2. Run the **addNode** command.

    Run the following command from the command line if security is not enabled:

    ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port*

Run the following command from the command line if security is enabled:

```
./addNode.sh deployment_manager_host deployment_manager_SOAP_port -username
userID_for_authentication -password password_for_authentication
```

An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

```
ADMU0003I: Node DMNDID2Node03 has been successfully federated.
```

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

➡ Add managed nodes (WebSphere Application Server)

Loading the database with system information in a network deployment environment:

If you are creating a network deployment environment, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

- In a network deployment (ND) environment, you must run this command after a server or cluster of servers is created. **For a cluster, you need to run the command only once**, specifying a single cluster member. Run this command after the database and its tables have been created, after the profile and deployment environment have been created, and before the first server is started. You do not need to rerun the command if you add another cluster member.

Run the bootstrap utility from the command line. The bootstrap utility is found in the deployment manager profile directory. For example:

> Linux   UNIX   *install_root*/profiles/Dmgr01/bin

> Windows   *install_root*\profiles\Dmgr01\bin

Run the bootstrap utility using one of the following commands:
- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath*] **-clusterName** *cluster_name*
- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath*] **-nodeName** *node_name* **-serverName** *server_name*

where:
- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.
- **-clusterName** is the name of the application target cluster. You must specify either this parameter or the **-nodeName** and **-serverName** parameters.
- **-nodeName** is the name of the node. You must specify either this parameter and the **-serverName** parameter, or the **-clusterName** parameter.

- **-serverName** is the name of the server. You must specify either this parameter and the **-nodeName** parameter, or the **-clusterName** parameter.

The parameters are case-sensitive.

Important: For SQL Server only: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

You have loaded the database with system information prior to successfully starting the IBM Business Process Manager server. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*clusterName*.*timestamp*.log or bootstrapProcessServerData.*nodeName*.*serverName*.*timestamp*.log depending on the target you specified. The console displays a subset of the logged information.

Bootstrap data onto a server that is part of an ND environment but not part of a cluster:

```
bootstrapProcessServerData -nodeName node01 -serverName server1
```

Bootstrap data onto a cluster that hosts the Process Server or Process Center:

```
bootstrapProcessServerData -clusterName myAppCluster
```

Modifying an existing installation:

After you install and configure the runtime environment on your system in IBM Business Process Manager, you might want to customize your configuration. For example, you might want to customize settings, set up an additional security provider, set up user accounts, and change and encrypt passwords.

Installing and configuring IBM Business Process Manager on AIX

Install IBM Business Process Manager on AIX, and configure a stand-alone or network deployment environment.

Configuring a stand-alone environment on AIX

You can use a typical installation to install the software and configure a stand-alone Process Center or Process Server profile. Or you can choose custom installation and then create profiles, giving you more control over how to configure your software.

Typical installation and configuration:

The Typical installation option is the simplest and quickest method for installing and configuring IBM Business Process Manager.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Related reference:

▐➤ IBM Business Process Manager Standard system requirements

Installing and configuring IBM Business Process Manager with a DB2 database server:

You can install IBM Business Process Manager using a DB2 database server. You must make sure the required databases are available before you install.

Creating DB2 databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

Installing and configuring Process Center with a DB2 database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty. The databases must be created with at least a 32K page size.

Be prepared to specify the following information during installation:

- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   ```
   extract_directory/launchpad.sh
   ```

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:
   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.
   - **Location**: Click **Browse** to change the installation location for Process Center.

7. Specify the required database information.

Table 67. Required database configuration fields for DB2

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.

Table 67. Required database configuration fields for DB2 (continued)

Field	Action needed
Port	Accept the default value of 50000 or enter the correct server port number.
Username	Enter the user name to authenticate with the database. **Restriction:** User names must not contain National Language Strings (NLS).
Password	Enter an encrypted password to authenticate with the database.
Common database name	Enter the name for the Common database.
Process Center database name	Enter the name for the Process Center database.
Performance Data Warehouse database name	Enter the name for the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.

Related information:

➡ Installation Manager updates

Installing and configuring Process Server with a DB2 database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty. The databases must be created with at least a 32K page size.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.

- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or `manageprofiles` command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

       /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

       extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:

   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 68. Required database configuration fields for DB2

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of `50000` or enter the correct server port number.
Username	Enter the user name to authenticate with the database. **Restriction:** User names must not contain National Language Strings (NLS).
Password	Enter an encrypted password to authenticate with the database.
Common database name	Enter the name for the Common database.
Process Server database name	Enter the name for the Process Server database.
Performance Data Warehouse database name	Enter the name for the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

↪ Installation Manager updates

Installing and configuring IBM Business Process Manager with an Oracle database server:

You can install IBM Business Process Manager using an Oracle database server. You must make sure the required databases are available before you install.

Creating Oracle databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

Installing and configuring Process Center with an Oracle database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

```
ifix.1=/bpmUpdates
fixpack.2=http://test/rep
launchpad.1=/launchpad_updates
fixpack.WAS_REP=/WAS_updates
fixpack.BPM_REP=/BPM_updates
```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:

   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.

   - **Location**: Click **Browse** to change the installation location for Process Center.

7. Specify the required database information.

Table 69. Required database configuration fields for Oracle

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1521 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database System Identifier	Enter the correct Process Center database System Identifier.
Common database	For the Common database, enter values for the following parameters: • **User name**: Enter the Common database user name. • **Password**: Enter an encrypted password to authenticate with the Common database.
Process Center database	For the Process Center database, enter values for the following parameters: • **User name**: Enter the Process Center database user name. • **Password**: Enter an encrypted password to authenticate with the Process Center database.

Table 69. Required database configuration fields for Oracle (continued)

Field	Action needed
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name**: Enter the Performance Data Warehouse database user name. • **Password**: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.

Related information:

⮕ Installation Manager updates

Installing and configuring Process Server with an Oracle database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
• The user name and password for database authentication
• The database server host name and port
• The name of the Process Center or Process Server database.
• The name of the Performance Data Warehouse database.
• The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:
   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     – Select **Production** if the server is to be used in a production capacity.
     – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     – Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 70. Required database configuration fields for Oracle

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1521 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database System Identifier	Enter the correct Process Center database System Identifier.
Common database	For the Common database, enter values for the following parameters: • `User name`: Enter the Common database user name. • `Password`: Enter a password to authenticate with the Common database.
Process Server database	For the Process Server database, enter values for the following parameters: • `User name`: Enter the Process Server database user name. • `Password`: Enter an encrypted password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name`: Enter the Performance Data Warehouse database user name. • `Password`: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

⤷ Installation Manager updates

Installing and configuring IBM Business Process Manager with an SQL Server database server:

You can install IBM Business Process Manager using a Microsoft SQL Server database server. You must make sure the required databases are available before you install.

Creating SQL Server databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:
   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

   ```
   osql -b -S hostname -U db_user_account -P db_user_password
   -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
   ```

   where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.

   b. To create the Common database:

   ```
   osql -b -S hostname -U db_user_account -P db_user_password
   -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
   ```

   The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

   Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

   ```
   org.springframework.beans.factory.BeanCreationException: Error creating bean with name
   'message.routingCache'
   defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
   org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
   [com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
   nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
   bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
   com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

   Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
   at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
   at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
   (SQLServerPreparedStatement.java:388)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
   ```

```
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**..

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

On Windows Vista and Windows 7:

a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

c. Right-click **Local DTC** and then select **Properties**.

d. Click the **Security** tab on the **Local DTC Properties** dialog box.

e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

f. Click **OK** again to close the Properties dialog box, and then close Component Services.

g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

b. Unzip archive to any folder.

c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the x86 folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the x64 folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Installing and configuring Process Center with an SQL Server database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:
   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.
   - **Location**: Click **Browse** to change the installation location for Process Center.

7. Specify the required database information.

Table 71. Required database configuration fields for SQL Server

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1433 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database name	Enter the Process Center database name.
Performance Data Warehouse database name	Enter the Performance Data Warehouse database name.
Common database	For the Common database, enter values for the following parameters: • `User name`: Enter the Common database user name. • `Password`: Enter an encrypted password to authenticate with the Common database.

Table 71. Required database configuration fields for SQL Server (continued)

Field	Action needed
Process Center database	For the Process Center database, enter values for the following parameters: • **User name**: Enter the Process Center database user name. • **Password**: Enter an encrypted password to authenticate with the Process Center database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name**: Enter the Performance Data Warehouse database user name. • **Password**: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.

Related information:

⇨ Installation Manager updates

Installing and configuring Process Server with an SQL Server database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
• The user name and password for database authentication
• The database server host name and port
• The name of the Process Center or Process Server database.
• The name of the Performance Data Warehouse database.
• The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:

   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 72. Required database configuration fields for SQL Server

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1433 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Server database name	Enter the Process Server database name.
Performance Data Warehouse database name	Enter the Performance Data Warehouse database name.
Common database	For the Common database, enter values for the following parameters: • `User name`: Enter the Common database user name. • `Password`: Enter an encrypted password to authenticate with the Common database.
Process Server database	For the Process Server database, enter values for the following parameters: • `User name`: Enter the Process Server database user name. • `Password`: Enter a password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name`: Enter the Performance Data Warehouse database user name. • `Password`: Enter a password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

➡ Installation Manager updates

Custom installation and configuration:

Use the Custom installation option to install IBM Business Process Manager if you need any installation or configuration options that are not provided by the Typical installation option, if you want to install silently, or if you want to install on an existing installation of WebSphere Application Server.

Related reference:

➡ IBM Business Process Manager Standard system requirements

Installing IBM Business Process Manager Standard:

With custom installation, you can select interactive or silent installation. Select interactive installation if you want to install on an existing WebSphere Application Server.

Related reference:

➡ IBM Business Process Manager Standard system requirements

Installing IBM Business Process Manager Standard interactively:

You can install the IBM Business Process Manager product package interactively.

Before you install IBM Business Process Manager, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

Related reference:

➡ IBM Business Process Manager Standard system requirements

Installing interactively with a new installation of WebSphere Application Server:

Using custom installation, you can install IBM Business Process Manager with a new installation of WebSphere Application Server.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Access the media in one of the following ways, depending on whether you are installing from the product DVD or from images downloaded from Passport Advantage. You can run only one launchpad at a time.
   - If you are installing from the product DVD, insert the product disk labeled IBM Business Process Manager Standard into the disk drive. Mount the disk drive if necessary. If autorun is enabled on

your workstation, the launchpad program automatically opens, and you can proceed to the next step. If autorun is not enabled on your workstation, enter the following command to start the launchpad manually:

> *mount_point*/launchpad.sh

- If you are installing from images downloaded from Passport Advantage, perform the following steps:

    a. Go to the directory into which you extracted the images.

    b. Enter the following command to start the launchpad:

    > *extract_directory*/launchpad.sh

2. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically.

   If you do not have access to the Internet and want updates to the launchpad to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates. Create the following file:

   > /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses a launchpad prefix, followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

3. After starting the launchpad, click **Custom installation** on the Welcome page.

4. Click **Install as administrative user** to install as an administrative user. If you are a root user, you can install as an administrative user. If you are not a root user, or if you want to install to your own user name without root privileges, clear this check box.

5. Click **Install**. When you install IBM Business Process Manager, the required WebSphere Application Server Network Deployment is automatically installed.

6. On the Install Packages page of the Installation Manager, select the **IBM Business Process Manager Standard** package.

7. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

8. On the Licenses page, read the license agreement. If you agree to the terms of the license agreement, click **I accept the terms in the license agreements** and click **Next**.

9. On the Location page, the **Create new package group** option is selected by default. Select a location for the shared resources directory and a location for the Installation Manager and click **Next**. The Install Packages wizard checks your system for operating system prerequisites. If you are at a higher major release of a supported operating system, or if the operating system itself is not on the supported list, you might encounter a warning. You can continue with the installation, but the installation or product operation might not succeed until you apply maintenance.

If you see a warning, go to the product support web pages and obtain the latest maintenance packages to apply after installation. See the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

10. On the Features page, expand the plus symbol to select the package features that you want to install. Installation Manager automatically enforces any dependencies with other features and shows the updated download size and disk space requirements for the installation.

   a. Optional: To see the dependency relationships between features, select **Show Dependencies**.

   b. Optional: Click a feature to view its brief description under **Details**.

   c. Optional: If you are installing Process Server, you can expand the Process Server feature and change the Process Server use. Select "Production" (the default) to use the server in production, or "Non-production" to use the server only for test, staging, or development. Your selection is recorded in the product tag for inventory purposes.

   Restriction: Do not mix production and non-production servers in the same cell.

   When you are finished selecting features, click **Next**.

11. On the Summary page, review your choices before installing the IBM Business Process Manager Standard package. If you want to change the choices that you made on previous pages, click **Back** and make your changes. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.

12. When the installation process is complete, a message confirms the success of the process.

   a. Optional: Click **View Log File** to open the installation log file for the current session in a new window. You must close the Installation Log window to continue.

   b. Select **Profile Management Tool** if you want to run the Profile Management Tool when you finish or select **None** to complete the installation.

   c. Click **Finish** to close the Installation Manager.

Related information:

➜ Installation Manager updates

Installing IBM Business Process Manager silently:

You can install the IBM Business Process Manager product package in *silent* installation mode. When you install in silent mode, the user interface is not available.

Before you install IBM Business Process Manager, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

Related reference:

➜ IBM Business Process Manager Standard system requirements

Installing silently using the command line:

You can install IBM Business Process Manager silently using the command line.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Standard installation, you must install them as part of the silent installation. The required base products are:

- Installation Manager

- WebSphere Application Server Network Deployment, including the ejbdeploy and thinclient features.

The silent installation performs the following tasks:

- Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
- Installs the required base products and IBM Business Process Manager Standard.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: Run the following command to generate encrypted passwords using IBM Installation Manager to securely connect to DB2 and the administrative console.

   extract_directory/IM/tools/imutilsc -silent -nosplash encryptString *password_to_encrypt*

2. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.

3. Run the following command:

   extract_directory/IM/tools/imcl install *list_of_product_IDs* -acceptLicense
   -installationDirectory *location* -repositories *repository* -showVerboseProgress
   -log *logName*.log

   where:

   - *list_of_product_IDs* is a list of the IDs for the products and features that you want to install. You must include the required features. The syntax is *productID,feature,feature*, with multiple products separated by spaces.

Table 73. Product IDs

Product	Product ID	Feature	Description
IBM BPM Standard	com.ibm.bpm.STD.V80	bpmStd.nonprod	Test, staging, or development use. You must specify either this feature or bpmStd.prod.
		bpmStd.prod	Production use. You must specify either this feature or bpmStd.nonprod.
WebSphere Application Server Network Deployment	com.ibm.websphere.ND.v80	core.feature	Required. WebSphere Application Server core content.
		ejbdeploy	Required. Pre-Enterprise JavaBeans (EJB) 3.0 modules.
		thinclient	Required. Stand-alone thin clients and resource adapters.
		embeddablecontainer	Embeddable EJB container.
		samples	Sample applications feature.
		com.ibm.sdk.6_32bit	32-bit software development kit (SDK). You must specify either this feature or com.ibm.sdk.6_64bit.
		com.ibm.sdk.6_64bit	64-bit SDK This feature can only be selected on a 64-bit system. You must specify either this feature or com.ibm.sdk.6_32bit.

Table 73. Product IDs (continued)

Product	Product ID	Feature	Description
Installation Manager	com.ibm.cic.agent	agent_core	Installation Manager core content.
		agent_jre	Installation Manager Java Runtime Environment (JRE).

- *location* is the path to the directory where you want to install the products.
- *repository* is the path to the repository where you have extracted the files, one of the following directories:

  extract_directory/repository/repos_32bit
  extract_directory/repository/repos_64bit

  For more than one repository, separate the repository locations with commas.
- *key=value* is a list of the keys and values you want to pass to the installation, separated by commas. Do not put spaces between the commas. Create encrypted passwords using the IBM Installation Manager.

Table 74. Keys

Key	Description
user.db2.use.existing	If you are using an existing DB2 setup, add the following line exactly: user.db2.use.existing=true If DB2 must be installed, specify the value *false*.
user.bpm.admin.password	Encrypted password for the user name for the administrative console. The decrypted default value is admin. This property is needed only if you are creating a profile.
user.db2.port	Port for the DB2 database. The default value is 50000.

- *logName* is the name of the log file to record messages and results.

  Running this command installs the product with the default features. If you want to install specific features or make other changes, see the reference link for the command-line arguments for imcl.

Installation Manager installs the list of products and writes a log file to the directory that you specified.

The following example installs IBM Business Process Manager Standard and WebSphere Application Server Network Deployment on AIX.

```
imcl install com.ibm.bpm.STD.V80,bpmStd.prod
com.ibm.websphere.ND.v80,core.feature,ejbdeploy,thinclient,embeddablecontainer,samples,com.ibm.sdk.6_32bit
-acceptLicense -installationDirectory /usr/IBM/BPM80
-repositories /usr/tmp/BPM/repository -showVerboseProgress -log silentinstall.log
```

Define a stand-alone server or deployment manager profile in the Profile Management Tool or using the **manageprofiles** command-line utility. Only profiles created with the Profile Management Tool or **manageprofiles** can be used in production.

Related reference:

⬐ Command-line arguments for imcl

⬐ IBM Business Process Manager Standard system requirements
Related information:

⬐ IBM WebSphere Application Server Information Center

Installing silently using a response file:

You can install IBM Business Process Manager Standard silently by creating a response file and then running a command to use that response file to install the product.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Standard installation, you must install them as part of the silent installation. The required base products are:
- Installation Manager
- WebSphere Application Server Network Deployment, including the ejbdeploy and thinclient features.

The silent installation performs the following tasks:
- Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
- Installs the required base products and IBM Business Process Manager Standard.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: Run the following command to generate encrypted passwords using IBM Installation Manager to securely connect to DB2 and the administrative console.

   `extract_directory/IM/tools/imutilsc -silent -nosplash encryptString password_to_encrypt`

2. Create the response file that will install the required base products and IBM Business Process Manager Standard. Copy the sample response file from the following directory to create your own response file:

   `extract_directory/responsefiles/BPM/template_response.xml`

3. Modify the parameters as directed in the text of the response file template to create your response file.

   Make the following changes:
   - Set your repository location. If you are not running directly from the `extract_directory/responsefiles/BPM/` directory, point to the location of your installation repository. The repository can be local or remote. If you are running from the DVD, copy the response file from the DVD and point it back at the repository on the DVD.
   - Set the replacement variables in the response file as follows:
     - ${INSTALL_LOCATION_IM} - The location where IBM Installation Manager is already installed or will be installed.
     - ${LOCATION_ECLIPSE_CACHE} - The location of the Eclipse cache. This location must be set only if the location has not already been defined. Comment out this line if the location has already been set.
     - ${INSTALL_LOCATION} - The location where you want to install the product.
     - ${FEATURE_LIST} - The list of features for the product. This list must be replaced with the list of features that you want installed. Follow the instructions included in the `template_response.xml` file.

       Tip: You must specify either the production or the non-production feature, but not both.

4. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.
5. Run the following command:

   Root user:

   ```
   extract_directory/IM/installc -acceptLicense input
   extract_directory/responsefiles/BPM/template_response.xml
   -log preferred_log_location/silent_install.log
   ```

   Nonroot user:

   ```
   extract_directory/IM/userinstc -acceptLicense input
   extract_directory/responsefiles/BPM/template_response.xml
   -log preferred_log_location/silent_install.log
   ```

Installation Manager installs any required prerequisites and IBM Business Process Manager Standard, and writes a log file to the directory you specified.

Define a stand-alone server or deployment manager profile in the Profile Management Tool or using the **manageprofiles** command-line utility. Only profiles created with the Profile Management Tool or **manageprofiles** can be used in production.

Related tasks:

[→] Installing silently by using Installation Manager

[→] Recording a response file with Installation Manager

Related reference:

[→] IBM Business Process Manager Standard system requirements

Granting write permission of files and directories to nonroot users for profile creation or augmentation:

If you are not the user who installed the product, you must have write permission to selected directories within the IBM Business Process Manager installation. The product installer can grant this permission or create a group with permission to create or augment profiles.

The product installer (who can be a root or nonroot user) can grant write permission to the appropriate IBM Business Process Manager files and directories to nonroot users. The nonroot users can then create profiles. Alternatively, the product installer can create a group for users who are authorized to create profiles or give individual users the authority to create profiles.

Nonroot users create their own profiles to manage their own environments. Typically, they manage environments for development purposes.

Nonroot users must store their profiles in their private directory structure, not in the *install_root*/profiles directory of the product.

Restrictions:
- IBM Business Process Manager does not support changing ownership of existing profiles from the product installer to nonroot users. A nonroot user cannot augment profiles owned by another user.
- Mechanisms within the Profile Management Tool that suggest unique names and port values are disabled for nonroot users. The nonroot user must change the default field values in the Profile Management Tool for the profile name, node name, cell name, and port assignments. The product installer can assign nonroot users a range of values for each of the fields, and assign responsibility to the users for adhering to their assigned value ranges and for maintaining the integrity of their own definitions.

If you already created at least one profile, certain directories and files were created. You can skip the steps in this topic that create these directories and files. If no profile was previously created, you must complete the steps to create the required directories and files.

The following example task shows how to create a group that is authorized to create profiles. The terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager. The installer can perform the following steps to create the profilers group and give the group appropriate permissions to create a profile.

1. Log on to the IBM Business Process Manager system as the product installer. The product installer can be a root or nonroot user.
2. Using operating system commands, perform the following steps:
   a. Create a group named **profilers**, which will contain all users who can create profiles.
   b. Create a user named **user1**, who can create profiles.
   c. Add users **product_installer** and **user1** to the **profilers** group.
3. Log off and log back on as the installer to pick up the new group.
4. If no profile exists, create the following directories as the installer:
   - Create the *install_root*/**logs/manageprofiles** directory:

     ```
     mkdir install_root/logs/manageprofiles
     ```
   - Create the *install_root*/**properties/fsdb** directory:

     ```
     mkdir install_root/properties/fsdb
     ```
5. If no profile exists, create the profileRegistry.xml file as the installer. For this example, the file path is:

   ```
    install_root/properties/profileRegistry.xml
   ```

   Add the following information to the profileRegistry.xml file. The file must be encoded as UTF-8.
   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <profiles/>
   ```
6. As the product installer, use operating system tools to change directory and file permissions. The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **/opt/IBM/WebSphere/AppServer**.

```
export WASHOME=/opt/IBM/WebSphere/AppServer
echo $WASHOME
echo "Performing chggrp/chmod per WAS directions..."
chgrp profilers $WASHOME/logs/manageprofiles
chmod g+wr  $WASHOME/logs/manageprofiles
chgrp profilers $WASHOME/properties
chmod g+wr  $WASHOME/properties
chgrp profilers $WASHOME/properties/fsdb
chmod g+wr  $WASHOME/properties/fsdb
chgrp profilers $WASHOME/properties/profileRegistry.xml
chmod g+wr  $WASHOME/properties/profileRegistry.xml
chgrp -R profilers $WASHOME/profileTemplates
```

Issue the following additional commands:
```
chgrp profilers $WASHOME/properties/Profiles.menu
chmod  g+wr $WASHOME/properties/Profiles.menu
```

You might have to change the permissions on additional files if the nonroot user encounters permission errors. For example, if the product installer authorizes a nonroot user to delete a profile, then the product installer might have to delete the following file:

```
install_root/properties/profileRegistry.xml_LOCK
```

Give write access to the nonroot user for the file to authorize the user to delete the file. If the nonroot user still cannot delete the profile, then the product installer can delete the profile.

The installer created the **profilers** group and gave the group the correct permissions to the directories and files required for a nonroot user to create profiles.

The nonroot user that belongs to the **profilers** group can create profiles in a directory that the nonroot user owns and to which the nonroot user has write permission. However, the nonroot user cannot create profiles in the installation root directory of the product.

The root user and the nonroot user can use the same tasks to manage profiles.

Configuring profiles and databases:

After you install the product, if you did not use typical installation, you must create or augment one or more profiles to define the runtime environment. Before starting a profile, you must have configured the databases that are to be used with the profile.

Configuring a stand-alone environment with a DB2 database server on AIX:

You can configure a stand-alone environment for IBM Business Process Manager using a DB2 database server.

Creating DB2 databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

If you plan to use DB2 Universal Database, as part of preparing your database server:

* You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands during profile creation. Add the **db2profile** script to the /etc/profile file. Run

  ```
  vi /etc/profile
  ```

  and add the following lines:

  ```
  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

  After adding the db2profile script to the /etc/profile directory, you must run the **db2profile** script to set the DB2 environment.

* You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using db2inst1 as the user ID, add the root user to the /etc/group administrative groups. Run

  ```
  vi /etc/group
  ```

and update the following lines:

```
dasadm:|;101:dasusr1,db2inst1,root
db2iadm:|:102;root
db2fadm:|:103;db2fenc1,root
```

If the procedure is not followed, you might see the following exceptions when creating or augmenting a profile.

- When the **db2profile** script is not run:

```
/opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
```

- When the DB2 database manager is not running:

```
SQL1032N No start database manager command was issued. SQLSTATE=57019
```

- When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:

```
SQL1092N "ROOT" does not have the authority to perform the requested command.
```

Creating database design files for DB2:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for stand-alone profiles with DB2:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option

(2)bpm.advanced.standalone.topology, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
(2)[BPC]        WBI_BPC :  [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = not complete]
(6)[SibME]      WBI_BPC_ME :  [status = not complete]
(7)[SibME]      WBI_CEI_ME :  [status = not complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]       BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]       BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

```
[status] WBI_CommonDB is not complete with 1 remaining item(s):
[ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database User name[default=] :
```

```
Schema name[default=] :
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server host[default=] :
      Database server port[default=50000] :
      Data source user name[default=] :
      Data source password[default=] :
      DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   --------------------------------------------------------------------------------

   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
   (2)[BPC]       WBI_BPC  : [status = complete]
   ```

```
 (3)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = complete]
 (4)[BPM_ProcessServer]  BPM_ProcessServer : [status = not complete]
 (5)[BSpace]    WBI_BSPACE :  [status = complete]
 (6)[SibME]     WBI_BPC_ME : [status = complete]
 (7)[SibME]     WBI_CEI_ME : [status = complete]
 (8)[SibME]      WBI_SCA_APP_ME : [status = complete]
 (9)[SibME]    WBI_SCA_SYS_ME : [status = complete]
 (10)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
 (11)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
 (12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.standalone**, after you configure the master component, all database components are listed as complete.

    ```
    [info] Please pick one of the following [database component(s)] :

    (1)[BPM_ProcessServer]  BPM_ProcessServer : [master] [status = complete]
    (2)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = complete]
    (3)[SibMe]      BPM_PerformanceDW_ME : [status = complete]
    (4)[SibMe]      BPM_ProcessServer_ME : [status = complete]
    (5)[save and exit]

    Please enter the number for the database component :5

    [status] bpm.standard.standalone is complete with 0 remaining item(s):
    ```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named `dbDesignGenerator.log` is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with DB2 in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.
```

```
-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message `The system cannot find the specified path.` you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=BPMDB] :
   Database User name[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   Regular pagesize[default=32k] :
   Regular TableSpace[default=TWPSSPACE] :
   Temporary pagesize[default=32k] :
   Temporary TableSpace[default=TWPSTEMPSPACE] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

     Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-ProcessServer for BPM_ProcessServer

[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-distributed-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with a DB2 database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your DB2 database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

If you plan to configure the databases on a remote server, you must have created the databases before beginning to create or augment the profile. You can create databases on the local server or use existing databases on a remote server.

If you plan to use DB2 Universal Database, as part of preparing your database server:

- You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands during profile creation. Add the **db2profile** script to the /etc/profile file. Run

  ```
  vi /etc/profile
  ```

  and add the following lines:

  ```
  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

  After adding the db2profile script to the /etc/profile directory, you must run the **db2profile** script to set the DB2 environment.
- You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using db2inst1 as the user ID, add the root user to the /etc/group administrative groups. Run

  ```
  vi /etc/group
  ```

and update the following lines:

```
dasadm:|;101:dasusr1,db2inst1,root
db2iadm:|:102;root
db2fadm:|:103;db2fenc1,root
```

If the procedure is not followed, you might see the following exceptions when creating or augmenting a profile.

- When the **db2profile** script is not run:

```
/opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
```

- When the DB2 database manager is not running:

```
SQL1032N No start database manager command was issued. SQLSTATE=57019
```

- When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:

```
SQL1092N "ROOT" does not have the authority to perform the requested command.
```

Creating Process Center stand-alone profiles with a DB2 database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name, Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

   • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

   – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    * `key.p12`: Contains the default personal certificate.
    * `trust.p12`: Contains the signer certificate from the default root certificate.
    * `root-key.p12`: Contains the root signing certificate.
    * `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    * `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    * `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    * The ports are assigned to a profile created under an installation performed by the current user.
    * The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

a. Select the **Create a web server definition** check box.

b. Specify the web server characteristics on the page, and click **Next**

c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

d. Click **Next**.

14. Advanced: Configure the databases using a design file.

a. Select **Use a database design file**.

b. Click **Browse**.

c. Specify the fully qualified path name for the design file.

d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

15. On the Database Configuration - Part 1 page, specify your database information.

a. From the **Select a database product** list, select **DB2**.

b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

e. Click **Next**.

16. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 75. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in `${WAS_INSTALL_ROOT}/db2/java`.

Table 75. Required database configuration fields for DB2 Database (continued)

Field	Action needed
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with a DB2 database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

14. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    - Environment **Type**: Select how the Process Server is used:

      – Select **Production** if the server is to be used in a production capacity.

      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

15. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

> **Important:** If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.

a. From the **Select a database product** list, select **DB2**.

b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

e. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 76. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in `${WAS_INSTALL_ROOT}/db2/java`.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

• If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the `bootstrapProcessServerData` command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:
   ```
   chmod 644 BPM_StandAlone.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/default.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with a DB2 database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **DB2**.

   b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

   c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

   e. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 77. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in ${WAS_INSTALL_ROOT}/db2/java.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 50000 or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

11. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with a DB2 database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **DB2**.

    b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

    c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

    d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

    e. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 78. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.

Table 78. Required database configuration fields for DB2 Database (continued)

Field	Action needed
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in ${WAS_INSTALL_ROOT}/db2/java.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 50000 or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

12. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions

are installed in your environment. Make sure that you specify the fully qualified file path for
-templatePath, because a relative file path for the **-templatePath** parameter results in the specified
profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM
directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response
file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example
'personalCertValidityPeriod=1 ' or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an
appropriate response file based on the type of profile (stand-alone or network, Process Center or
Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process
  Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process
  Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager
  Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process
  Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager
  Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced
  Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager
  Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced
  Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign
the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited
response file. Make sure that the **templatePath** property path matches your specific installation
directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters.
For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax
checking on the response file applies as the file is parsed like any other response file. Individual
values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases
  and load the Process Server database with system information using the **bootstrapProcessServerData**
  command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring DB2 databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/ProcessServer/DB2/ at profile creation time.

2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.

   For example, the following command will connect to the database with the default user ID:
   ```
   db2 connect to databaseName
   ```

   If you log in as **BPMUSER/DB2ADMIN** to the operating system and the datasource for the Process Server database is configured to use **DBUSER** to authenticate, use:
   ```
   db2 connect to databaseName USER DBUSER USING password
   ```

3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

4. Create the table procedures for Process Server.

   From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

   Important: Use **GO** as a delimiting character when executing the stored procedure.
   For example:
   ```
   db2 -tdGO -vf createProcedure_ProcessServer.sql
   ```

5. Reset the connection. For example:
   ```
   db2 connect reset
   ```

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.
1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to `install_root/profile`/dbscripts/PerformanceDW/DB2/ at profile creation time.
2. Connect to your database. For example, run **db2 connect to** *databaseName*.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **db2admin**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **db2admin** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.
3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
1. Go to the directory containing the `configBusinessSpaceDB.sh` script. The default directory is `install_root/profile`/dbscripts/BusinessSpace/`node_name_server_name`/DB2/CMNDB.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.sh

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the `bootstrapProcessServerData` command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the `98database.xml` file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the `Profile_name`/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

    install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

* **bootstrapProcessServerData.sh [-dbJDBCClasspath *classpath*]**

where:

* **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:
bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:
bootstrapProcessServerData -dbJDBCClasspath /DB2/java

Configuring a stand-alone environment with a DB2 for z/OS database server on AIX:

You can configure a stand-alone environment for IBM Business Process Manager using a DB2 Universal Database for z/OS database server.

Creating database design files and database scripts (AIX stand-alone):

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for stand-alone profiles with DB2 for z/OS:

Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:
- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as

/tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.

- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

    /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]     WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]      WBI_BSPACE :  [status = not complete]
   ```

```
 (6)[SibME]     WBI_BPC_ME :  [status = not complete]
 (7)[SibME]     WBI_CEI_ME :  [status = not complete]
 (8)[SibME]     WBI_SCA_APP_ME :  [status = not complete]
 (9)[SibME]     WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Data source user name[default=] :
   Database schema name (SQLID)[default=] :
   Bufferpool of 4K size for tables[default=BP1] :
   Bufferpool for indexes[default=BP2] :
   Bufferpool of 4K size for LOB data[default=BP3] :
   Bufferpool of 8K size for tables[default=BP8K1] :
   Bufferpool of 16K size for tables[default=BP16K1] :
   Bufferpool of 32K size for tables[default=BP32K1] :
   Storage group name[default=] :
   ```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC : [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer : [status = not complete]
(5)[BSpace]     WBI_BSPACE : [status = complete]
(6)[SibME]      WBI_BPC_ME : [status = complete]
(7)[SibME]      WBI_CEI_ME : [status = complete]
(8)[SibME]      WBI_SCA_APP_ME : [status = complete]
```

```
(9)[SibME]    WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]    BPM_PerformanceDW_ME :  [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]    BPM_ProcessServer_ME :  [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. For any database components that are listed as a parent to another component, configure the parent before the other components because the information provided will be used as default settings for the database component listing the parent. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    Note: For DB2 for z/OS, you must configure each of the remaining components. The following guidelines apply:

    - Ensure that you specify the appropriate schema name for each of the remaining database components. Typically, the Process Server, Performance Data Warehouse, and messaging engine components require unique schema names; the remaining components can be assigned the same schema name. You might also be prompted for other values that are unique to the type of component being configured; for example, a prefix for table space names or a value for VSAM catalog names (VCAT).

    - If you intend to use a single database for all the system integration bus messaging engines, specify unique prefixes for their table space names because these prefixes will be used to keep the table space name of each messaging engine unique within the database.

    - As you configure each component, verify that the values inherited from the master component are appropriate, and amend as required. For example, if you are planning to use more than one database, you might want to amend the database name to reflect the planned distribution of database objects across the DB2 for z/OS subsystem.

    - When configuring the Process Server component (**BPM_ProcessServer**), you are asked to specify whether the database is for a Process Center or Process Server:

      ```
      [info] Please pick one of the following [Is this database for a Process Center?(s)] :

      (1)false
      (2)true
      ```

      If you want to create a Process Center profile or cluster in a network deployment environment, you must choose the **true** option. If you set the option to **false**, you will not be able to access the Process Center console.

      If the database is for a Process Server, you must choose the **false** option.

    If you selected **bpm.advanced.standalone**, after you configure the master component, you must manually configure the **BPM_PerformanceDW** and **BPM_ProcessServer** components. Also edit the configuration values of the remaining components to ensure that the configuration is appropriate for each of the databases you want to create.

    ```
    [info] Please pick one of the following [database component(s)] :

    (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = complete]
    (2)[BPC]        WBI_BPC :  [status = complete]
    (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
    (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
    (5)[BSpace]     WBI_BSPACE :  [status = complete]
    (6)[SibME]      WBI_BPC_ME :  [status = complete]
    (7)[SibME]      WBI_CEI_ME :  [status = complete]
    (8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
    (9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
    ```

```
(10)[SibMe]      BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :12

[status] bpm.advanced.standalone.topology is not complete with 6 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'catalog' for VCAT is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 4 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.
[ 5 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 6 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'catalog' for VCAT is empty.
```

11. When all database components for your database pattern have been configured and are listed as
    [status = complete] in the database design tool, type the appropriate number to select **[save and
    exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to
    which you want to save the file and then press Enter. If you have not yet created the directory in
    your file system, the database design tool will automatically create it when the file is generated.
    After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and
    then press Enter. If a file of the same name already exists in the specified directory, you can choose
    to either overwrite the file or specify a different file name. After you enter the file name at the
    prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. To generate the database scripts for each component in the directory that you specified earlier, type y
    and press Enter. A series of information messages is displayed to indicate that the scripts for all the
    components have been generated. For each component, you see information similar to the following
    example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories. Each of the directories also
  contains a **createDB2.sh** script, which you can later run together with the database scripts to create the
  database objects.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the
  DbDesignGenerator command.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files and database scripts for a specific component with DB2 for z/OS in a stand-alone environment:

You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
    - The location of the database tables.
    - The location of the JDBC driver on the system where the server profile will be created.
    - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.

   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=BPMDB] :
Data source user name[default=] :
Database schema name (SQLID)[default=] :

[info] Please pick one of the following [Is this database for a Process Center?(s)] :

(1)false
(2)true

Please enter the number for the Is this database for a Process Center? [default=false] :
The user ID you use for administrative security[default=] :
The password for the name specified with the adminUserName parameter[default=] :
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

> **Note:** The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred
      value and press Enter. If you are asked whether you want to create the database tables during
      configuration, specify **false**. This option enables you to run the SQL scripts manually at your
      designated time, and to create and organize the databases according to your DB2 for z/OS best
      practices and conventions.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to
   which you want to save the file and then press Enter. If you have not yet created the directory in
   your file system, the database design tool will automatically create it when the file is generated.
   After you enter the location at the prompt, you see information similar to the following example:

   ```
   Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
   ```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you
   enter the file name, you see information similar to the following example:

   ```
   generate database scripts? (y/n) [default=y] :
   ```

10. To generate database scripts based on the information provided to the database design tool, type y
    and press Enter. You see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/dbscripts/DB2-zOS/ProcessServer for BPM_ProcessServer
    ```

    ```
    [info] thanks, quitting now ...
    ```

A database design file is created and, optionally, database scripts are created at the locations that you
specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be
used to create the database tables. The generated database design file includes only values for this
configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Related tasks:

"Creating the messaging engine data stores" on page 529
If the messaging engine data stores have not already been created, use the database design tool to
generate the database scripts that the database administrator will use to create the tables for the
messaging engine data stores.

Generating scripts for creating database objects in DB2 for z/OS:

From an installation of IBM Business Process Manager, you can generate database scripts for creating IBM
Business Process Manager database objects in a DB2 for z/OS database subsystem. You can use the
database design tool to generate the scripts.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Prepare the following information, which provides input to the database scripts that you plan to generate:

- Information about how IBM Business Process Manager and its components are installed.
- Information about the database configuration that you are designing for the DB2 for z/OS subsystem. This information can be supplied by the database administrator or solution architect, and can include details about the required parameters and properties; for example:
  – Database server details
  – Data source details
  – Location of the JDBC driver on the system where the server profile will be created
  – User ID and password for authenticating to the database
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

To generate the database scripts for creating your database objects, you can run the database design tool in silent mode with the **-g** command-line parameter. In this mode, the tool requires input from a database design file that defines the configuration for your DB2 for z/OS database. The database design file must already exist before you generate the database scripts. You can generate the database design file by running the database design tool in interactive mode, or by using a configuration planning spreadsheet:

- You can run the database design tool in interactive mode to generate a database design file. Follow the prompts in the tool to define a DB2 for z/OS database configuration for your stand-alone or network deployment topology.
- The configuration planning spreadsheet is a supplementary artifact that can be downloaded from the IBM Support Portal. The spreadsheet is primarily intended for use with IBM Business Process Manager for z/OS, but can be tailored for use with IBM Business Process Manager on Linux on System z. The configuration planning spreadsheet consists of a number of worksheets that use color coding and comments to assist with data entry, and to help you establish naming conventions. The spreadsheet also includes macros that you can use to generate a database design file, among other files. Before using the spreadsheet, run the database design tool in interactive mode to become familiar with the required configuration options for each of the components.

  You can download the Microsoft Excel spreadsheet from Techdoc WP102075. The data that you require to complete the spreadsheet can span multiple roles, such as systems programmer, product administrator, and database administrator. Therefore, it is advisable to review the spreadsheet in detail and then work with the relevant personnel to establish naming conventions and to complete the entries. After completing the entries, use the **Save** button on the DataBase Design File worksheet to generate the database design file.

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as `/tmp/DB2-zOS/W8CELLDB`. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as `/tmp/DB2-zOS/W8S1DB`. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. If necessary, copy the database design file, which defines your DB2 for z/OS configuration, to the workstation where IBM Business Process Manager is installed, to make the file available for use with the **DbDesignGenerator** command.

2. From the command line, change to the IBM Business Process Manager directory where the **DbDesignGenerator** command is stored:

   ```
   cd /install_root/util/dbUtils
   ```

   For example: `cd /opt/IBM/WebSphere/AppServer/util/dbUtils`

3. Run the **DbDesignGenerator** command using the following syntax:

   ```
   DbDesignGenerator.sh -g db_design_file
   ```

   where *db_design_file* is the fully qualified name of the database design file. For example:

   ```
   DbDesignGenerator.sh -g /tmp/DB2-zOS/W8CELL.nd.dbDesign
   ```

4. Review the information that is displayed on the screen, checking that no error messages are displayed. For each database component, the database design tool writes information messages to the screen to indicate that the scripts were generated in the directory specified in the database design file. For example, for the Common database component, you see information similar to the following example:

   ```
   [info] The script(s) have been generated in
   C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB
   ```

   After the last set of scripts is generated, you see information similar to the following example:

   ```
   [info] thanks, quitting now ...
   ```

   A log file named `dbDesignGenerator.log` is created in the directory from which you ran the **DbDesignGenerator** command.

   Tip: In the database design file, the directories for the SQL scripts are defined by the *ddl_outDir* variable in each component section. If you want to generate the SQL scripts to a set of different directories, a quick way to do this is to manually update the values of the *ddl_outDir* variables. Then save the database design file, and run the **DbDesignGenerator** command again.

1. Check the specified directory locations to see the database scripts that were generated. Each directory additionally includes a **createDB2.sh** script that you can use to run the SQL.

   To use these scripts to create the IBM Business Process Manager database objects in the DB2 for z/OS subsystem, you must first transfer the scripts to the z/OS system.

2. Use FTP to transfer all the generated database scripts to the z/OS system that contains the installation of DB2. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.

3. Run the **createDB2.sh** script from the z/OS UNIX System Services command environment to create the DB2 for z/OS database objects.

   Note: The **createDB2.sh** script requires execute permissions.

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-zOS-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with a DB2 for z/OS database server:

You can create profiles using the Profile Management Tool or the `manageprofiles` command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Creating Process Center stand-alone profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:
    a. Select the **Create a web server definition** check box.
    b. Specify the web server characteristics on the page, and click **Next**
    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.
    d. Click **Next**.
14. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.

       With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.
    d. Click **Next**. The design file location is passed to the command line to complete the database configuration.
15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

b. Specify the web server characteristics on the page, and click **Next**

c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

d. Click **Next**.

14. On the Process Server Configuration page, set the values for the following parameters.

- **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

- **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

15. Advanced: Configure the databases using a design file.

a. Select **Use a database design file**.

b. Click **Browse**.

c. Specify the fully qualified path name for the design file.

    With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.

d. Click **Next**. The design file location is passed to the command line to complete the database configuration.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:
   ```
   chmod 644 BPM_StandAlone.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/default.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with a DB2 for z/OS database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.

      With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.
   d. Click **Next**. The design file location is passed to the command line to complete the database configuration.
9. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.
10. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.
- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with a DB2 for z/OS database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.

- Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     – Select **Production** if the server is to be used in a production capacity.
     – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

9. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

      With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.

   d. Click **Next**. The design file location is passed to the command line to complete the database configuration.

10. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

11. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.

   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating and configuring DB2 for z/OS databases after stand-alone profile creation:

After creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

DB2 for z/OS authorization prerequisites:

Before you create the IBM Business Process Manager databases, you must ensure that the required authorizations are granted for your DB2 for z/OS version. Also ensure that the appropriate storage groups and buffer pools are assigned, and configure clustering if necessary.

User authorization requirements for DB2 for z/OS

Ask your DB2 for z/OS system administrator to check the authorizations that have been granted to ensure that you have not granted more authority than necessary to any user ID. It can be tempting to grant DB2 SYSADM authority to the JCA authentication aliases in order to avoid possible problems with DB2 security during the configuration. The WebSphere administrator ID should not require more than DBADM authority to define the IBM Business Process Manager databases.

The following storage group, database, and buffer pool GRANT permissions are provided by default, for the WebSphere administrator identified as #*DB_USER*#. These permissions are available in the `createDatabase.sql` database script that is generated by the database design tool:

```
GRANT USE OF STOGROUP #STOGRP# TO #DB_USER# WITH GRANT OPTION;
GRANT DBADM ON DATABASE #DB_NAME# TO #DB_USER#;
GRANT USE OF ALL BUFFERPOOLS TO #DB_USER#;
```

The following GRANT permission might be required to permit the #*DB_USER*# user to create sequences and stored procedures with a schema qualifier of #*SCHEMA*#:

```
GRANT CREATEIN,ALTERIN,DROPIN ON SCHEMA #SCHEMA# TO #DB_USER# WITH GRANT OPTION;
```

The following permissions are also required:

```
GRANT CREATE ON COLLECTION #SCHEMA# TO #DB_USER#;
GRANT BINDADD TO #DB_USER#;
```

Authorization requirements for views on DB2 for z/OS V10

If you are planning to use DB2 for z/OS V10, additional permissions are required for views in the database:

- Before you run the SQL to define views, you might need to set the DBACRVW subsystem parameter to YES.

  This setting ensures that WebSphere administrator IDs with DBADM authority on database #*DB_NAME*# can create views for other user IDs.

- On DB2 for z/OS V10, the WebSphere administrator ID must be specifically granted access to views, because access is not implicitly granted to users with DBADM authority on the database. Individual GRANT statements or a Resource Access Control Facility (RACF) group can be used to provide access to views in DB2 for z/OS V10. Ask your DB2 for z/OS administrator to provide this access by using either of the following methods:

  – Issue an explicit GRANT statement for each view. For example, the following sample GRANT statements can be issued for user ID WSADMIN:

```
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_SERVICE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.APPLICATION_COMP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG_B TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY_LDESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
```

```
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.EVENT TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.MIGRATION_FRONT TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_INSTANCE TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPLATE TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPL_ATTR TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROPERTY TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROP_TEMPL TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.SHARED_WORK_ITEM TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_CPROP TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_DESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_HISTORY TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_DIST_TARGET TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_LDESC TO WSADMIN WITH GRANT OPTION;
      GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_ITEM TO WSADMIN WITH GRANT OPTION;
```

– Define a RACF group that corresponds to the schema name for the views, and connect the
  WebSphere administrator ID to the RACF group. For example, you can define a RACF group named
  S1CELL, and connect user WSADMIN to it, as follows:

```
INFORMATION FOR GROUP S1CELL
 SUPERIOR GROUP=ZWPS   OWNER=ZWPS   CREATED=07.144
 INSTALLATION DATA=OWNED BY EMP SERIAL 009179, SITE ABCUK
 NO MODEL DATA SET
 TERMUACC
 NO SUBGROUPS
 USER(S)=  ACCESS=  ACCESS COUNT=  UNIVERSAL ACCESS=
   WSADMIN   CONNECT   000000    NONE
    CONNECT ATTRIBUTES=NONE
    REVOKE DATE=NONE     RESUME DATE=NONE
```

Using the configuration planning spreadsheet to define authorizations

If you have downloaded the configuration planning spreadsheet for use, you can alternatively use this
spreadsheet to generate the GRANT permissions that are required for users and for DB2 for z/OS V10
views (as identified in the preceding sections in this topic). The configuration planning spreadsheet is
available from Techdoc WP102075 in the IBM Support Portal.

The Database worksheet in the spreadsheet lists a set of sample SQL statements that can be used to create
the databases and storage groups. Additionally, the GRANT permissions that are required to authorize
the WebSphere administrator and to provide access to DB2 for z/OS V10 database tables are provided.
When you specify the user and database object names on the BPMVariables worksheet of the spreadsheet,
these values are propagated to the Database worksheet, and are used to complete the CREATE and
GRANT statements with the appropriate values.

Ask your DB2 for z/OS system administrator to use the relevant CREATE statements to create the
databases and storage groups, and to use the GRANT statements to authorize the WebSphere
administrator. For more information about using the artifacts generated from the spreadsheet, see the
accompanying PDF document in the Techdoc.

Storage group assignments and buffer pool usage

Ask your DB2 for z/OS system administrator to check the storage group assignments and buffer pool
usage. Incorrect storage group assignment and buffer pool usage might not show up as an error message
in a log, but might cause problems later. It is better to resolve such problems now rather than when the

system has been handed over for use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.

Clustering requirements

If you intend to configure clustering, your DB2 for z/OS system must be running in data-sharing mode.

Related tasks:

"Creating database design files and database scripts (AIX stand-alone)" on page 493
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (AIX network deployment)" on page 614
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux stand-alone)" on page 155
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux network deployment)" on page 277
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris stand-alone)" on page 826
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris network deployment)" on page 949
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Windows stand-alone)" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

"Creating database design files and database scripts (Windows network deployment)" on page 1304
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating databases in the DB2 for z/OS subsystem:

When you use the database design tool (**DbDesignGenerator**) to define your database configuration, you can generate the database scripts that are required for creating the databases for the IBM Business Process Manager components.

You can use various tools to run these database scripts:

- When you run the database design tool to generate the database scripts, the **createDB2.sh** script is also generated. You can use **createDB2.sh** to run the database scripts.
- You can use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to run the database scripts.

Choosing which tool to use

You can choose one tool over another based on experience and familiarity, or personal preference. Your organization might also have implemented standards or conventions for the tools used to create DB2 for z/OS objects, particularly in a production environment.

Considerations for choosing the createDB2.sh script
- **createDB2.sh** can create all your database objects in one simple execution of the tool, so it is a good choice if this is your first server implementation.
- **createDB2.sh** runs the database scripts that the database design tool (**DbDesignGenerator**) generates.
- **createDB2.sh** runs the SQL for each component in the correct sequence.
- **createDB2.sh** creates database objects according to a naming convention that you define.
- **createDB2.sh** organizes the layout of database objects across DB2 for z/OS databases.
- **createDB2.sh** issues GRANT permissions to database, storage group, and buffer pool objects.
- **createDB2.sh** automatically completes customization of the service integration bus Data Definition Language (DDL).
- **createDB2.sh** runs in a UNIX System Services environment.
- **createDB2.sh** produces an audit trail of the objects that it creates.

Considerations for choosing other tools
- You might prefer to use the DB2 command line processor to run the SQL statements in the UNIX Systems Services environment. You must first run the **createDB2.sh** script in a mode that bypasses execution of the SQL statements and instead consolidates them into two `.sql` files. You can then run these files by using the command line processor.
- There is no restriction on the naming or organization conventions that apply to the database objects other than the standard database subsystem restrictions.
- Some tools can be run from a z/OS environment.
- The tools can produce an audit trail of the DB2 database commands that have been issued.

Related tasks:

"Creating database design files and database scripts (AIX stand-alone)" on page 493
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Configuring the DB2 command line processor:

Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

Ensure that a properties file, for example, `clp.properties`, exists for the DB2 command line processor. If required, you can create your own properties file by using the sample properties file that is available in the directory where the command line processor is installed. For more information, see your DB2 for z/OS documentation.

Complete the following configuration steps in the z/OS UNIX System Services environment from which the **createDB2.sh** script will be run:
1. Configure the DB2 command line processor for each user ID that will work with DB2 for z/OS from the command line. You can update the personal or shared user profiles as follows:
   - Modify the CLASSPATH environment variable to include the `clp.jar` file.
   - Use the CLPPROPERTIESFILE environment variable to define the fully qualified name of the properties file for the command line processor.

- Define the **db2** command as an alias for the command that starts the command line processor.
- Specify the `DB2JccConfiguration.properties` file that defines the JDBC properties to be applied to the command line processor.

You can use the following syntax to add the required entries to the `.profile` or `/etc/profile` file:

```
export CLPHOME=clp_install_dir
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=clp_properties_file_path
alias db2="java -Ddb2.jcc.propertiesFile=
/file_path/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

For example:

```
export CLPHOME=/shared/db2910_base
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=/wasv8config/clp.properties
alias db2="java -Ddb2.jcc.propertiesFile=
/wasv8config/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

2. In the properties file for the command line processor, define alias names that can be used to connect to the DB2 for z/OS server. An alias name definition includes the following entities:
   - A URL that specifies the domain name or IP address of the database server, the port on which the server listens, the DB2 location name defined during installation, and the property for the JDBC connection. The URL can take the form: *server:port/database* property=*value*. The port and property values are optional, and the DB2 location name must be specified in uppercase characters.
   - A user ID and an associated password that can be used to connect to the DB2 server. This user ID should correspond to the user ID (with SYSADM authority) that the DB2 system administrator uses to run the **createDB2.sh** script.

   You can add the required alias name entries to the properties file by using the following syntax:

   ```
   DB2ALIASNAME=URL,user_ID,password
   ```

   For example:

   ```
   DSNXWBD=localhost:9446/DSNXWBD,SYSADM1,SYSPWRD1
   ```

   Tip: When you define a *DB2ALIASNAME* value in the properties file, ensure that the correct connection details are specified to avoid connecting to the wrong database and inadvertently overwriting its contents.

3. Configure the DB2 DBACRVW subsystem parameter to enable user IDs with DBADM authority on a database to perform the following tasks for other user IDs: create views on tables in the database, create aliases for tables, and create materialized query tables. You can use the installation Command List (CLIST) to access the DSNTIPP ISPF panel and update the DBADM CREATE AUTH field to set DB2 ZPARM DBACRVW=YES.

Use the **createDB2.sh** script to either run the SQL to create the database objects for a specified database, or to consolidate the SQL statements into two `.sql` files that you can run later using other database tools.

Related tasks:

"Creating DB2 for z/OS database objects using the createDB2.sh script"
After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 526
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating DB2 for z/OS database objects using the createDB2.sh script:

After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

You can also use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to create and populate databases.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

The number of databases that you create for your IBM Business Process Manager installation can depend on your topology, and how you want to distribute your database objects across the DB2 for z/OS subsystem. Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created. For example:

- To create a single database, you can run **createDB2.sh** once from a directory that contains all the database scripts that were generated for all the IBM Business Process Manager components.
- To create multiple databases at the cell level and cluster levels, you can run **createDB2.sh** once from each directory that contains the database scripts required to create the database objects for the cell and clusters.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   ```
   cd /u/work/S4CELLDB
   ```

2. Run the **createDB2.sh** script by using the following syntax:

   ```
   createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate
   -DBVCat volume_catalog -DBUser DB_user_ID -RunSQL
   ```

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
   Specifies the name of the database to be created.

   -DBSto
   Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
   Creates the database.

   -DBVCat
   Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

   -DBUser
   Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

   -RunSQL
   Runs the SQL statements that create the database objects.

   For example:

   ```
   createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
   -DBUser S4ADMIN -RunSQL
   ```

   For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

3. Review the messages that are displayed in the console, checking that no error messages are displayed.

   Tip: The first time that you run **createDB2.sh** to create the database, you see a few messages because the script first attempts to drop the database, which at that stage does not yet exist. These messages can be ignored, and subsequent invocations of **createDB2.sh** for the same database will not produce such messages.

   When the script has finished running, you can also review the z_output.txt file, which provides an audit trail of the operations completed and status messages. This file is stored in the directory from which you ran the **createDB2.sh** script.

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 522
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (AIX stand-alone)" on page 493
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using the DB2 command line processor:

When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

You can also run these .sql files by using any other database tool of your choice, such as SPUFI or DSNTEP2.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:
1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

```
cd /u/work/S4CELLDB
```

2. Run the **createDB2.sh** script by using the following syntax:

```
createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate
-DBVCat volume_catalog -DBUser DB_user_ID
```

where:

-DBAlias
> Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

-DBName
> Specifies the name of the database to be created.

-DBSto
> Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

-DBCreate
> Creates the database.

-DBVCat
> Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser
> Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

Tip: By omitting the **-RunSQL** parameter, you bypass the execution of the SQL statements that create the database objects, and instead consolidate the statements into two `.sql` files.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

The `z_schema.sql` and `z_schemaProc.sql` files, which hold the consolidated SQL statements, are generated in the directory from which you ran the **createDB2.sh** script. The `z_schemaProc.sql` file contains SQL statements for stored procedures, and is generated in addition to `z_schema.sql` because stored procedures require the "at" sign (@) as a statement termination character when running the command line processor.

3. Run the DB2 command line processor in batch mode to execute the SQL in the `z_schema.sql` file:

```
db2 -f /createDB2.sh_path/z_schema.sql
```

For example:

```
db2 -f /u/work/S4CELLDB/z_schema.sql
```
The command line processor reads the data in the file, and processes the commands in the file consecutively.

4. Run the DB2 command line processor again to execute the SQL in the `z_schemaProc.sql` file, and additionally use the **-td** parameter to define @ as the statement termination character:

```
db2 -td@ -f /createDB2.sh_path/z_schemaProc.sql
```

For example:

```
db2 -td@ -f /u/work/S4CELLDB/z_schemaProc.sql
```

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 522
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (AIX stand-alone)" on page 493
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using SPUFI or DSNTEP2:

You can use tools such as SPUFI or DSNTEP2 to run the database scripts that are used to create the DB2 for z/OS database objects for your configuration.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, which are required to create the database, into that directory.

  Tip: The generated scripts that you use to create the database objects can either be in ASCII or EBCDIC format. Typically, the generated `.sql` files are in ASCII format, and the equivalent `.ddl` files are in EBCDIC format.

- Use FTP to transfer the database scripts to the z/OS system that contains the DB2 for z/OS installation.
- Create or augment the profile.

You can create the database objects by using the tool of your choice. For example:

SPUFI A utility that runs SQL scripts from z/OS. SPUFI uses EBCDIC input.

DSNTEP2
      A sample dynamic SQL program provided with the DB2 for z/OS product.

1. Assign the appropriate read permissions to the SQL scripts; for example:

   ```
   chmod 644 createTable_AppScheduler.sql
   ```

2. If the tool that you want to use to view, edit, and run the scripts requires the scripts to be in EBCDIC format, rather than ASCII format, use the **iconv** command to convert the files to EBCDIC. For example:

   ```
   iconv -t IBM-1047 -f ISO8859-1 createTable_AppScheduler.sql >
   createTable_AppScheduler_EBCDIC.sql
   ```

   Important: After converting from ASCII to EBCDIC, check that no SQL statements exceed 71 characters in length. Longer lines will lead to line truncation and invalid statements when copying to fixed-width MVS data sets.

   Tip: If you have converted the files from ASCII format to EBCDIC, but need to run the files in ASCII format, you can also use **iconv** to convert the files back to ASCII. For example:

```
iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >
createTable_AppScheduler.sql
```

3. Edit the values in the createDatabase.sql and dropDatabase.sql files according to your requirements. The following symbolic variables need to be updated:

```
@STOGRP@    = DB2 Storage group name
@DB_NAME@   = DB2 Database name
@SCHEMA@    = DB2 SQLID (Schema Qualifier)
@BPTABLE4K@ = Buffer Pool of 4k Size
@BPINDEX@   = Buffer Pool Index
@VOLUMES@   = DB2 comma separated list of volume-ids
@VCAT@      = DB2 integrated catalog facility name
@DB_USER@   = The user ID which will be used to create the database objects
```

4. To create database objects outside of the z/OS UNIX environment by using SPUFI or DSNTEP2, copy the customized database scripts from z/OS UNIX to a partitioned data set.

5. Run the customized scripts by using the tool of your choice.

   Tip: If you previously ran the **createDB2.sh** script and chose to bypass execution of the SQL scripts, you can also run the consolidated SQL files (z_schema.sql and z_schemaProc.sql), which were generated.

6. Verify that the database tables are created successfully with no errors by inspecting the output.

Related tasks:

"Creating database design files and database scripts (AIX stand-alone)" on page 493
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 526
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating the messaging engine data stores:

If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

You must create and populate a messaging engine data source for each of the following components that you configure:
- Service Component Architecture system bus
- Service Component Architecture application bus
- Process Server
- Performance Data Warehouse
- Common Event Infrastructure

You can create all the database objects in one or more databases in the DB2 for z/OS subsystem. Take note of the following considerations:
- All messaging engines use the same table names. Therefore, the tables for each messaging engine require a unique schema qualifier.
- When you use the database design tool to define the database configuration for each messaging engine, you can specify a prefix for table space names:

- If you intend to use a single database for all the messaging engines, specify a unique table space prefix for each messaging engine to make its table space name unique within the database.
- If you intend to use a separate database for each messaging engine, the table space prefixes that you specify for the messaging engines can be identical or unique.

1. For each messaging engine, complete the following steps to generate the required database scripts:
   a. Run the database design tool (**DbDesignGenerator**) from the *install_root*/util/dbUtils directory.
   b. Select option **(2)Create a database design for a single component**, and then select the appropriate option for the messaging engine.
   c. Complete the remaining prompts in the tool to define the database configuration and to generate the scripts.

   Tip: As an alternative to running the database design tool multiple times to generate scripts for each of the messaging engines, you can run the tool once using option **(1)Create a database design for Standalone profile or Deployment Environment**. With this option, you can define the database configuration and generate database scripts for the following components in a single pass through the tool: Common database, Business Process Choreographer, Performance Data Warehouse, Process Server, Business Space, and the six messaging engines.

2. Run the generated DDL scripts using the tool of your choice.

The messaging engine data stores are created.

Related tasks:

"Creating database design files and database scripts for a specific component with DB2 for z/OS in a stand-alone environment" on page 500
You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

"Creating database design files and database scripts for stand-alone profiles with DB2 for z/OS" on page 493
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

Granting table privileges to the JCA authentication alias user ID:

If the schema name you are using is not the same as the JCA authentication alias user ID, you must grant a subset of DB2 for z/OS privileges to the JCA authentication alias user ID.

The database scripts for the service integration bus (SIB) contain commented GRANT commands that you can use as a basis for granting access to the SIB tables. However, the other IBM Business Process Manager components do not supply GRANT statements.

Use a schema name that is different from the JCA authentication alias to prevent the alias user ID from having the authority to drop tables. (The authority to drop tables is implicitly granted to the creator, that is, the schema.) Note that it does not make sense to grant a privilege like DBADM to the JCA authentication alias user ID because DBADM also has the ability to drop tables.

If you want IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the database scripts and editing them to construct GRANT commands from the CREATE commands. You can create GRANT commands like the one shown in the following example:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

where *userid/sqlid* is the JCA authentication alias user ID.

Note: Typically, the creator of a database object has implicit use of that object without requiring additional GRANT permissions. However, for DB2 for z/OS Version 10, additional GRANT permissions might be required for views because access to views is not implicitly granted to the creator.

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

    install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

*   **bootstrapProcessServerData.sh [-dbJDBCClasspath *classpath*]**

where:

*   **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:
bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:
bootstrapProcessServerData -dbJDBCClasspath *JDBC_DRIVER_PATH*

Setting the correct schema name for the messaging engines:

To ensure that the service integration bus (SIB) messaging engines can access the appropriate DB2 for z/OS tables, the correct schema name must be set for the messaging engines. You can use the administrative console to change the schema names.

Start the server.

1. Log in to the administrative console.
2. Navigate to **Service Integration** > **Buses**.
3. For each messaging engine:
   a. Select **Messaging engines**, and then click the name that is displayed.
   b. Click **Message store**.
   c. Change the value of **Schema name** to the name used when creating the DB2 for z/OS tables for this messaging engine.
   d. Click **Apply**.
   e. Save your configuration changes.
4. Verify that the messaging engines can be started:
   a. Log out of the administrative console.
   b. Stop, and then restart the server.
   c. Look in the output of the server log for successful SIB messaging engine startup messages. For example:
   ```
   BBO00222I: "BusName"
   CWSID0016I: Messaging engine MessagingEngineName is in state Started.
   ```

Configuring a stand-alone environment with an Oracle database server on AIX:

You can configure a stand-alone environment for IBM Business Process Manager using an Oracle database server.

Setting up Oracle databases:

You or your database administrator (DBA) can configure the Process Server database, Performance Data Warehouse database, and Common database before, after, or during creating or augmenting a profile.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

You have the following options for creating and configuring the databases:
- You or your DBA creates the databases in advance and the Profile Management Tool configures them for you during profile creation or augmentation.
- You or your DBA creates a database design file using the database design tool, and you pass the file to the Profile Management Tool or **manageprofiles** command-line utility during profile creation or augmentation.
- You postpone the database configuration, and you or your DBA creates the required databases and database tables afterwards by running the scripts that are generated during profile creation or augmentation.

Creating database design files for Oracle:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for stand-alone profiles with Oracle:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   ```

```
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]          WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]      WBI_BSPACE :  [status = not complete]
   (6)[SibME]       WBI_BPC_ME :  [status = not complete]
   (7)[SibME]       WBI_CEI_ME :  [status = not complete]
   (8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]       WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]      BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]      BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :
   
   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name(SID) [default=CMNDB] :
   Database User name[default=] :
   Database schema [default=] :
   System user name(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   Database Location(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   ```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.
   
   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :
   
   (1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
   ```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

-------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]    WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

If you selected **bpm.advanced.standalone**, you must manually configure the **BPM_PerformanceDW**, **BPM_ProcessServer**, and the corresponding **SibMe** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :3
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :4
--------------------------------------------------------------------------------

[status] BPM_ProcessServer is not complete with 3 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'databaseUser' for DB_USER is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as
    [status = complete] in the database design tool, type the appropriate number to select **[save and
    exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to
    which you want to save the file and then press Enter. If you have not yet created the directory in
    your file system, the database design tool will automatically create it when the file is generated.
    After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and
    then press Enter. If a file of the same name already exists in the specified directory, you can choose

to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/Oracle-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with Oracle in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.

- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

You are prompted to choose a component, as shown in the following example:

```
[info] Please pick one of the following [component(s)] :

(1)bpc
(2)bpcreporting
(3)bpm_performancedw
(4)bpm_processserver
(5)bspace
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name(SID) [default=BPMDB] :
   Database User name[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To
   skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input
   for profile creation or topology configuration, you must configure the data source. If you plan to use
   the database design tool to generate SQL, this step is optional.
   If you chose to configure the data source for your selected database type, you see the list of database
   providers for the data source. For example, you might see the following database providers for the
   Oracle database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter.
      After you select this database provider, you see a series of prompts similar to the following
      example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server host[default=] :
      Database server port[default=1521] :

      [info] Please pick one of the following [Oracle driver type(s)] :

      (1)oci8
      (2)thin

      Please enter the number for the Oracle driver type(s)? [default=thin] :
      Data source user name[default=] :
      Data source password[default=] :
      Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
      ] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred
      value and press Enter. If you are asked whether you want to create the database tables during
      configuration, specify **false** if you are using the database design file as input for creating a
      profile, because this option is also available in the Profile Management Tool and causes a conflict.
      If you are using the administrative console to create your deployment environment, you can
      decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to
   which you want to save the file and then press Enter. If you have not yet created the directory in
   your file system, the database design tool will automatically create it when the file is generated.
   After you enter the location at the prompt, you see information similar to the following example:

   ```
   Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
   ```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you
   enter the file name, you see information similar to the following example:

   ```
   generate database scripts? (y/n) [default=y] :
   ```

10. Optional: If you also want to generate database scripts based on the information provided to the
    database design tool, type y and press Enter. You see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/Oracle-ProcessServer for BPM_ProcessServer
    ```

    ```
    [info] thanks, quitting now ...
    ```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v Oracle-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with an Oracle database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your Oracle database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

To configure the database information while creating or augmenting the profile, you must know the service name for your Oracle instance.

1. Create a table space.
   ```
   SQL> CREATE TABLESPACE [tablespace_name] DATAFILE '[datafile_name]' SIZE 50M AUTOEXTEND ON NEXT 10M
   MAXSIZE UNLIMITED LOGGING;
   ```

2. Create the users. You will specify these users on the Database Configuration - Part 2 page in the Profile Management Tool. The following example assumes you create a BPMDBA user name for the Process Server database, a PDWDBA user name for the Performance Data Warehouse database, and a CMNDBA user name for the Common database:

```
SQL> CREATE USER BPMDBA IDENTIFIED BY [password] DEFAULT TABLESPACE [tablespace_name];
SQL> CREATE USER PDWDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
SQL> CREATE USER CMNDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
```

3. Grant privileges to the users that you specified in the previous step. For example:

```
SQL> GRANT ALL PRIVILEGES TO BPMDBA;
SQL> GRANT ALL PRIVILEGES TO PDWDBA;
SQL> GRANT ALL PRIVILEGES TO CMNDBA;
```

4. Grant execute privileges on DBMS_LOCK. For example:

```
SQL> GRANT execute on DBMS_LOCK to BPMDBA;
SQL> GRANT execute on DBMS_LOCK to PDWDBA;
SQL> GRANT execute on DBMS_LOCK to CMNDBA;
```

Creating Process Center stand-alone profiles with an Oracle database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

- Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

a. Select the **Create a web server definition** check box.

b. Specify the web server characteristics on the page, and click **Next**

c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

d. Click **Next**.

14. Advanced: Configure the databases using a design file.

a. Select **Use a database design file**.

b. Click **Browse**.

c. Specify the fully qualified path name for the design file.

d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

15. On the Database Configuration - Part 1 page, specify your database information.

a. From the **Select a database product** list, select **Oracle**.

b. Optional: If you want to change the default values, enter new names for the required databases.

   • The database names can be the same.

   • You must input the database service name for each database.

   • The database must already exist.

c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

d. Click **Next**.

16. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

   Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 79. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with an Oracle database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
  7. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The

password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

   Ports are recognized as being in use if the following conditions are satisfied:

   - The ports are assigned to a profile created under an installation performed by the current user.
   - The ports are currently in use.

   Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

   If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

   profile_root/properties/portdef.prop

   Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:
   a. Select the **Create a web server definition** check box.
   b. Specify the web server characteristics on the page, and click **Next**
   c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.
   d. Click **Next**.

14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
        - Select **Production** if the server is to be used in a production capacity.
        - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
        - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.
15. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step
16. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **Oracle**.
    b. Optional: If you want to change the default values, enter new names for the required databases.
        - The database names can be the same.

- You must input the database service name for each database.
- The database must already exist.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

   d. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

   Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 80. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	        Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	        Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	        Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	        Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	        Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	        Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

   Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.
- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.

- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/default.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with an Oracle database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **Oracle**.

   b. Optional: If you want to change the default values, enter new names for the required databases.

      - The database names can be the same.

      - You must input the database service name for each database.

      - The database must already exist.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   d. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

    Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 81. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Table 81. Required database configuration fields for Oracle (continued)

Field	Action needed
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.
- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

11. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with an Oracle database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when

deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **Oracle**.
    b. Optional: If you want to change the default values, enter new names for the required databases.
       - The database names can be the same.
       - You must input the database service name for each database.
       - The database must already exist.
    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.
    d. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 82. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

12. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the `bootstrapProcessServerData` command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the `manageprofiles` command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.

- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring Oracle databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/ProcessServer/Oracle/ at profile creation time.
2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.
3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). In this example, **Oracle1** is the password to connect to the Oracle instance and service:

   ```
   wbi/ProcessServer/BPMDBA>sqlplus BPMDBA/Oracle1@BPMDBA @createTable_ProcessServer.sql
   ```

   Make sure all SQL statements succeed without any errors.
4. Create the table procedures for Process Server.

   From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). For example:

   ```
   wbi/ProcessServer/BPMDBA>sqlplus BPMDBA/Oracle1@BPMDBA @createProcedure_ProcessServer.sql
   ```

   Make sure all SQL statements succeed without any errors.
5. Reset the connection.

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/PerformanceDW/Oracle/ at profile creation time.
2. Connect to your database.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **oracleDBUser**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **oracleDBUser** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.
3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). In this example, **Oracle1** is the password to connect to the Oracle instance and service:

```
wbi/PerformanceDW/BPMDBA>sqlplus PDWDBA/Oracle1@BPMDBA @createTable_PerformanceDW.sql
```

Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
1. Go to the directory containing the **configBusinessSpaceDB.sh** script. The default directory is *install_root*/*profile*/dbscripts/BusinessSpace/*node_name_server_name*/Oracle/CMNDB.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.sh

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:
   install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:
- **bootstrapProcessServerData.sh [-dbJDBCClasspath *classpath*]**

where:
- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:
bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:
bootstrapProcessServerData -dbJDBCClasspath *JDBC_DRIVER_PATH*

Configuring a stand-alone environment with an SQL Server database server on AIX:

You can configure a stand-alone environment for IBM Business Process Manager using a Microsoft SQL Server database server.

Creating SQL Server databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:
   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:
      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
      ```

      where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.
   b. To create the Common database:
      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
      ```

      The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

   Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:
   ```
   org.springframework.beans.factory.BeanCreationException: Error creating bean with name
   'message.routingCache'
   defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
   org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
   [com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
   nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
   bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
   com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
   ```

```
Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following
error message might be displayed during report generation using optimizer or portal for an existing
process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user
name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default
schema name associated with the user *perfDB* must also be named *perfDB*. You must create an
ordinary database user and assign the required rights to the user instead of using a super user, such
as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the
same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click
    Design.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you
start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise
Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the
SQLServerXADataSource class can participate in standard distributed transaction processing
environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup:
**javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the
XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'.".**.

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running
    when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these
    steps:

    On Windows XP and Windows Server 2003:

a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

c. Click the **MSDTC** tab, and then click **Security Configuration**.

d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

On Windows Vista and Windows 7:

a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

c. Right-click **Local DTC** and then select **Properties**.

d. Click the **Security** tab on the **Local DTC Properties** dialog box.

e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

f. Click **OK** again to close the Properties dialog box, and then close Component Services.

g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

b. Unzip archive to any folder.

c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the x86 folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the x64 folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating database design files for SQL Server:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for stand-alone profiles with SQL Server:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   ```

```
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]       WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool

is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database server host[default=] :
Database User name[default=] :
Database schema[default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server port[default=1433] :

[info] Please pick one of the following {Do you want to use windows authentication for the
databases ? (s)] :

(1) false
```

```
    (2) true

    Data source user name[default=] :
    Data source password[default=] :
    MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
```

> **Note:** The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]    WBI_CommonDB : [master] [status = complete]
(2)[BPC]          WBI_BPC : [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer : [status = not complete]
(5)[BSpace]     WBI_BSPACE : [status = complete]
(6)[SibME]      WBI_BPC_ME : [status = complete]
(7)[SibME]      WBI_CEI_ME : [status = complete]
(8)[SibME]      WBI_SCA_APP_ME : [status = complete]
(9)[SibME]     WBI_SCA_SYS_ME : [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

If you selected **bpm.standard.standalone**, after you configure the **BPM_ProcessServer**, you must manually configure the **BPM_PerformanceDW** component for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(5)[save and exit]

Please enter the number for the database component :2
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
```

```
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as
    [status = complete] in the database design tool, type the appropriate number to select **[save and
    exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to
    which you want to save the file and then press Enter. If you have not yet created the directory in
    your file system, the database design tool will automatically create it when the file is generated.
    After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and
    then press Enter. If a file of the same name already exists in the specified directory, you can choose
    to either overwrite the file or specify a different file name. After you enter the file name at the
    prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the
    database design tool, type y and press Enter. A series of information messages is displayed to
    indicate that the scripts for all the components have been generated. For each component, you see
    information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/SQLServer-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the
  DbDesignGenerator command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the
  option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database
  design file to ensure that the configured run time matches the database tables created from the SQL
  scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process
Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with SQL Server in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables
required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

        /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

Tip: If you see the message `The system cannot find the specified path.` you might have entered the path name incorrectly. Re-enter the path.

When the database design tool launches successfully, you see information similar to the following example:

```
[info] running DbDesignGenerator in interactive mode...

[info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
help at any time.
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=BPMDB] :
Database server host[default=] :
Database User name[default=] :

[info] Please pick one of the following [Is this database for a Process Center?(s)] :

(1)false
(2)true

Please enter the number for the Is this database for a Process Center? [default=false] :
The user ID you use for administrative security[default=] :
The password for the name specified with the adminUserName parameter[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server port[default=1433] :

      [info] Please pick one of the following {Do you want to use windows authentication for the databases ? (s)] :

      (1) false
      (2) true

      Data source user name[default=] :
      Data source password[default=] :
      MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict.

If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/SQLServer-ProcessServer for BPM_ProcessServer

[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v SQL Server-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered.

The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with an SQL Server database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your SQL Server database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

Before creating a profile, you must install Microsoft SQL Server on the server that hosts the database.

Restriction: The Process Server database (BPMDB) and the Performance Data Warehouse database (PDWDB) must NOT be case-sensitive. Other databases can be case-sensitive.

When you create your database schemas, you must have a user ID with enough authority to create your tables. After the tables are created, the applications must have enough authority to select, insert, update, and delete information in the tables.

The following table shows the database privileges that are required to access the data store.

Table 83.

Database management system	Minimum privilege required to use the data store tables	Additional privilege required to create the data store tables
Microsoft SQL Server	Configure the SQL Server for SQL Server so that authentication can be based on an SQL server login ID and password. The user ID can own the tables or be a member of a group that has sufficient authority to issue TRUNCATE TABLE statements.	The user ID requires the CREATE TABLE statement privilege.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the CMNDB database as owner dbo using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

IBM Business Process Manager packages JDBC drivers for SQL Server. For information about the JDBC drivers (including version and level information), see the Detailed hardware and software requirements for IBM Business Process Manager page.

Note: You are responsible for providing JDBC driver levels outside of what is packaged with IBM Business Process Manager.

You must configure XA transactions after the database is installed and before you start the server.

Creating Process Center stand-alone profiles with an SQL Server database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.
5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

   Ports are recognized as being in use if the following conditions are satisfied:

   - The ports are assigned to a profile created under an installation performed by the current user.
   - The ports are currently in use.

   Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

   If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

   `profile_root/properties/portdef.prop`

   Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

   a. Select the **Create a web server definition** check box.

   b. Specify the web server characteristics on the page, and click **Next**

   c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

   d. Click **Next**.

14. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

b. Click **Browse**.

c. Specify the fully qualified path name for the design file.

d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

> **Important:** If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

15. On the Database Configuration - Part 1 page, specify your database information.

a. From the **Select a database product** list, select **Microsoft SQL Server**.

b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

d. Click **Next**.

16. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 84. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	
Process Server database	For the Process Server database, enter values for the following parameters: • `User name` Enter the Process Server database user name. • `Password` Enter a password to authenticate with the Process Server database. • `Confirm password` Confirm the password to authenticate with the Process Server database.

Table 84. Required database configuration fields for Microsoft SQL Server - Part 2 (continued)

Field	Action needed

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• `Confirm password`
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 85. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

* MEDPS00 (Process Server messaging engine)
* MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with an SQL Server database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

- In the **Password** field, enter the password for the certificate
- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

14. On the Process Server Configuration page, set the values for the following parameters.

    • **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    • Environment **Type**: Select how the Process Server is used:

      – Select **Production** if the server is to be used in a production capacity.

      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    • **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    • **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

    • **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

    • **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

    • **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

15. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

> **Important:** If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Microsoft SQL Server**.

    b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

    d. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 86. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	  Enter the Process Server database user name.
	• `Password`
	  Enter a password to authenticate with the Process Server database.
	• `Confirm password`
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• `Confirm password`
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Table 86. Required database configuration fields for Microsoft SQL Server - Part 2 (continued)

Field	Action needed
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 87. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:
   ```
   chmod 644 BPM_StandAlone.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   `manageprofiles.sh -create -templatePath` *install_root*`/profileTemplates/BPM/default.procctr`

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   `manageprofiles.sh -response` *myResponseFile*

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with an SQL Server database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root`/java/bin/java -Duser.language=`*locale* *install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root`/java/bin/java -Duser.language=de` *install_root*`/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

   1. Use one of the following methods to start the Profile Management Tool.
      - Start the tool from the First steps console.
      - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
   2. Shut down any servers associated with a profile you plan to augment.
   3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **Microsoft SQL Server**.

   b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   d. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 88. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	  Enter the Process Server database user name.
	• `Password`
	  Enter a password to authenticate with the Process Server database.
	• `Confirm password`
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• `Confirm password`
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 89. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the

following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

> **Important:** You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

11. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with an SQL Server database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **Microsoft SQL Server**.
    b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.
    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.
    d. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 90. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	
Process Server database	For the Process Server database, enter values for the following parameters: • `User name` Enter the Process Server database user name. • `Password` Enter a password to authenticate with the Process Server database. • `Confirm password` Confirm the password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name` Enter the Performance Data Warehouse database user name. • `Password` Enter a password to authenticate with the Performance Data Warehouse database. • `Confirm password` Confirm the password to authenticate with the Performance Data Warehouse database.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 91. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

12. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.
13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.

- `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_StandAlone.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

   ```
   manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
   -profileName MyProfileName
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring SQL Server databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.
1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/ProcessServer/SQLServer/ at profile creation time.
2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.
3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.
4. Create the table procedures for Process Server.

   From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

   Important: Use **GO** as a delimiting character when executing the stored procedure.
5. Reset the connection.

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root/profile*/dbscripts/PerformanceDW/SQLServer/ at profile creation time.
2. Connect to your database.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **sqladmin**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **sqladmin** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.

3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.

1. Go to the directory containing the `configBusinessSpaceDB.sh` script. The default directory is *install_root/profile*/dbscripts/BusinessSpace/*node_name_server_name*/SQLServer/CMNDB.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.sh

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the `bootstrapProcessServerData` command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the `98database.xml` file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

*   **bootstrapProcessServerData.sh [-dbJDBCClasspath *classpath*]**

where:

*   **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Important: If the bootstrap utility fails, check that when you created the Process Server and Performance Data Warehouse databases, the **COLLATE** attribute indicated case insensitive (**CI**), not case sensitive (**CS**). That is, the create command should look like this:

CREATE DATABASE *database_name* COLLATE SQL_Latin1_General_CP1_**CI**_AS

Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
```

```
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

Bootstrap data onto the default stand-alone profile server:

`bootstrapProcessServerData`

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:

`bootstrapProcessServerData -dbJDBCClasspath` *JDBC_DRIVER_PATH*

Configuring a network deployment environment on AIX

For a network deployment configuration, you install the software and then create or augment a deployment manager, create or augment at least one custom profile, and configure the network deployment environment.

Granting write permission of files and directories to nonroot users for profile creation or augmentation:

If you are not the user who installed the product, you must have write permission to selected directories within the IBM Business Process Manager installation. The product installer can grant this permission or create a group with permission to create or augment profiles.

The product installer (who can be a root or nonroot user) can grant write permission to the appropriate IBM Business Process Manager files and directories to nonroot users. The nonroot users can then create profiles. Alternatively, the product installer can create a group for users who are authorized to create profiles or give individual users the authority to create profiles.

Nonroot users create their own profiles to manage their own environments. Typically, they manage environments for development purposes.

Nonroot users must store their profiles in their private directory structure, not in the *install_root*/profiles directory of the product.

Restrictions:
- IBM Business Process Manager does not support changing ownership of existing profiles from the product installer to nonroot users. A nonroot user cannot augment profiles owned by another user.
- Mechanisms within the Profile Management Tool that suggest unique names and port values are disabled for nonroot users. The nonroot user must change the default field values in the Profile Management Tool for the profile name, node name, cell name, and port assignments. The product installer can assign nonroot users a range of values for each of the fields, and assign responsibility to the users for adhering to their assigned value ranges and for maintaining the integrity of their own definitions.

If you already created at least one profile, certain directories and files were created. You can skip the steps in this topic that create these directories and files. If no profile was previously created, you must complete the steps to create the required directories and files.

The following example task shows how to create a group that is authorized to create profiles. The terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager. The installer can perform the following steps to create the `profilers` group and give the group appropriate permissions to create a profile.

1. Log on to the IBM Business Process Manager system as the product installer. The product installer can be a root or nonroot user.
2. Using operating system commands, perform the following steps:

a. Create a group named **profilers**, which will contain all users who can create profiles.

b. Create a user named **user1**, who can create profiles.

c. Add users **product_installer** and **user1** to the **profilers** group.

3. Log off and log back on as the installer to pick up the new group.

4. If no profile exists, create the following directories as the installer:

   - Create the *install_root*/**logs/manageprofiles** directory:

     ```
     mkdir install_root/logs/manageprofiles
     ```

   - Create the *install_root*/**properties/fsdb** directory:

     ```
     mkdir install_root/properties/fsdb
     ```

5. If no profile exists, create the `profileRegistry.xml` file as the installer. For this example, the file path is:

   ```
   install_root/properties/profileRegistry.xml
   ```

   Add the following information to the `profileRegistry.xml` file. The file must be encoded as UTF-8.

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <profiles/>
   ```

6. As the product installer, use operating system tools to change directory and file permissions. The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **/opt/IBM/WebSphere/AppServer**.

```
export WASHOME=/opt/IBM/WebSphere/AppServer
echo $WASHOME
echo "Performing chggrp/chmod per WAS directions..."
chgrp profilers $WASHOME/logs/manageprofiles
chmod g+wr   $WASHOME/logs/manageprofiles
chgrp profilers $WASHOME/properties
chmod g+wr   $WASHOME/properties
chgrp profilers $WASHOME/properties/fsdb
chmod g+wr   $WASHOME/properties/fsdb
chgrp profilers $WASHOME/properties/profileRegistry.xml
chmod g+wr   $WASHOME/properties/profileRegistry.xml
chgrp -R profilers $WASHOME/profileTemplates
```

Issue the following additional commands:

```
chgrp profilers $WASHOME/properties/Profiles.menu
chmod  g+wr $WASHOME/properties/Profiles.menu
```

You might have to change the permissions on additional files if the nonroot user encounters permission errors. For example, if the product installer authorizes a nonroot user to delete a profile, then the product installer might have to delete the following file:

```
install_root/properties/profileRegistry.xml_LOCK
```

Give write access to the nonroot user for the file to authorize the user to delete the file. If the nonroot user still cannot delete the profile, then the product installer can delete the profile.

The installer created the **profilers** group and gave the group the correct permissions to the directories and files required for a nonroot user to create profiles.

The nonroot user that belongs to the **profilers** group can create profiles in a directory that the nonroot user owns and to which the nonroot user has write permission. However, the nonroot user cannot create profiles in the installation root directory of the product.

The root user and the nonroot user can use the same tasks to manage profiles.

Creating databases and database design files:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. You must create the databases before network deployment.

Creating databases and database design files for DB2:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

Creating DB2 databases:

You can create the required databases before you create profiles.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

If you plan to use DB2 Universal Database, as part of preparing your database server:

- You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands during profile creation. Add the **db2profile** script to the /etc/profile file. Run

  ```
  vi /etc/profile
  ```

  and add the following lines:

  ```
  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

  After adding the db2profile script to the /etc/profile directory, you must run the **db2profile** script to set the DB2 environment.

- You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using db2inst1 as the user ID, add the root user to the /etc/group administrative groups. Run

  ```
  vi /etc/group
  ```

  and update the following lines:

  ```
  dasadm:|;101:dasusr1,db2inst1,root
  db2iadm:|:102;root
  db2fadm:|:103;db2fenc1,root
  ```

If the procedure is not followed, you might see the following exceptions when creating or augmenting a profile.

- When the **db2profile** script is not run:

```
/opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
```

- When the DB2 database manager is not running:

```
SQL1032N No start database manager command was issued. SQLSTATE=57019
```

- When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:

```
SQL1092N "ROOT" does not have the authority to perform the requested command.
```

Creating database design files for DB2:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with DB2:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.


-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).
```

```
-v db_design_file | db_scripts_output_directory
    when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
    generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:
   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:
   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]       WBI_BPC :  [status = not complete]
   ```

```
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = not complete]
(6)[SibME]      WBI_BPC_ME :  [status = not complete]
(7)[SibME]      WBI_CEI_ME :  [status = not complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]      BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]      BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database User name[default=] :
   Schema name[default=] :
   Regular pagesize[default=32k] :
   Regular TableSpace[default=WBISPACE] :
   Temporary pagesize[default=32k] :
   Temporary TableSpace[default=WBITEMPSPACE] :
   ```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server host[default=] :
      Database server port[default=50000] :
      Data source user name[default=] :
      Data source password[default=] :
      DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   --------------------------------------------------------------------------------

   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
   (2)[BPC]         WBI_BPC :  [status = complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]      WBI_BSPACE :  [status = complete]
   (6)[SibME]       WBI_BPC_ME :  [status = complete]
   (7)[SibME]       WBI_CEI_ME :  [status = complete]
   (8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
   (10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
   (11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
   (12)[save and exit]
   ```

   After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these

components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.nd**, after you configure the master component, all database components are listed as complete.

    ```
    [info] Please pick one of the following [database component(s)] :

    (1)[BPM_ProcessServer]  BPM_ProcessServer : [master] [status = complete]
    (2)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
    (3)[SibMe]        BPM_PerformanceDW_ME :  [status = complete]
    (4)[SibMe]        BPM_ProcessServer_ME :  [status = complete]
    (5)[save and exit]

    Please enter the number for the database component :5

    [status] bpm.standard.nd is complete with 0 remaining item(s):
    ```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.

- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with DB2 in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.
```

```
-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
    generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool

is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database User name[default=] :
Schema name[default=] :
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-CommonDB for WBI_CommonDB
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-distributed-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating database design files and database scripts (AIX network deployment):

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for deployment environments with DB2 for z/OS:

Use the database design tool to generate a design file that is used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool also generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).
```

```
-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

    /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

```
[info] running DbDesignGenerator in interactive mode...

[info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
help at any time.
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Data source user name[default=] :
Database schema name (SQLID)[default=] :
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool for indexes[default=BP2] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
```

```
    DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
    Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
    DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
    through jdbcDriver Type 4)[default=] :
```

> **Note:** The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred
      value and press Enter. If you are asked whether you want to create the database tables during
      configuration, specify **false**. This option enables you to run the SQL scripts manually at your
      designated time, and to create and organize the databases according to your DB2 for z/OS best
      practices and conventions.

   After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):


------------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]     WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

   After you finish configuring the master database component, the database design tool propagates the
   values that you entered, to the remaining components. If this can be done successfully, these
   components are also marked as **[status = complete]** along with the master component. If this cannot
   be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status
    = not complete]**. For any database components that are listed as a parent to another component,
    configure the parent before the other components because the information provided will be used as
    default settings for the database component listing the parent. You can also choose to reconfigure
    any components that are listed as **[status = complete]** as the result of configuring the master
    database component.

   Note: For DB2 for z/OS, you must configure each of the remaining components. The following
   guidelines apply:
   • Ensure that you specify the appropriate schema name for each of the remaining database
     components. Typically, the Process Server, Performance Data Warehouse, and messaging engine
     components require unique schema names; the remaining components can be assigned the same
     schema name. You might also be prompted for other values that are unique to the type of
     component being configured; for example, a prefix for table space names or a value for VSAM
     catalog names (VCAT).
   • If you intend to use a single database for all the system integration bus messaging engines, specify
     unique prefixes for their table space names because these prefixes will be used to keep the table
     space name of each messaging engine unique within the database.

- As you configure each component, verify that the values inherited from the master component are appropriate, and amend as required. For example, if you are planning to use more than one database, you might want to amend the database name to reflect the planned distribution of database objects across the DB2 for z/OS subsystem.

- When configuring the Process Server component (**BPM_ProcessServer**), you are asked to specify whether the database is for a Process Center or Process Server:

```
[info] Please pick one of the following [Is this database for a Process Center?(s)] :

(1)false
(2)true
```

If you want to create a Process Center profile or cluster in a network deployment environment, you must choose the **true** option. If you set the option to **false**, you will not be able to access the Process Center console.

If the database is for a Process Server, you must choose the **false** option.

If you selected **bpm.advanced.nd.topology**, after you configure the master component, you must manually configure the **BPM_PerformanceDW** and **BPM_ProcessServer** components. Also edit the configuration values of the remaining components to ensure that the configuration is appropriate for each of the databases you want to create.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]       WBI_CommonDB : [master] [status = complete]
(2)[BPC]          WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]       WBI_BSPACE :  [status = complete]
(6)[SibME]        WBI_BPC_ME :  [status = complete]
(7)[SibME]        WBI_CEI_ME :  [status = complete]
(8)[SibME]        WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]        WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]       BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe]       BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :12

[status] bpm.advanced.nd.topology is not complete with 6 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'catalog' for VCAT is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 4 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.
[ 5 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 6 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'catalog' for VCAT is empty.
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. To generate the database scripts for each component in the directory that you specified earlier, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories. Each of the directories also contains a **createDB2.sh** script, which you can later run together with the database scripts to create the database objects.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files and database scripts for a specific component with DB2 for z/OS in a network deployment environment:

You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.

- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

You are prompted to choose a component, as shown in the following example:

```
[info] Please pick one of the following [component(s)] :

(1)bpc
(2)bpcreporting
(3)bpm_performancedw
(4)bpm_processserver
(5)bspace
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Data source user name[default=] :
   Database schema name (SQLID)[default=] :
   Bufferpool of 4K size for tables[default=BP1] :
   Bufferpool for indexes[default=BP2] :
   Bufferpool of 4K size for LOB data[default=BP3] :
   Bufferpool of 8K size for tables[default=BP8K1] :
   Bufferpool of 16K size for tables[default=BP16K1] :
   Bufferpool of 32K size for tables[default=BP32K1] :
   Storage group name[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

   After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. To generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
```
```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Related tasks:

"Creating the messaging engine data stores" on page 714
If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Generating scripts for creating database objects in DB2 for z/OS:

From an installation of IBM Business Process Manager, you can generate database scripts for creating IBM Business Process Manager database objects in a DB2 for z/OS database subsystem. You can use the database design tool to generate the scripts.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Prepare the following information, which provides input to the database scripts that you plan to generate:

- Information about how IBM Business Process Manager and its components are installed.
- Information about the database configuration that you are designing for the DB2 for z/OS subsystem. This information can be supplied by the database administrator or solution architect, and can include details about the required parameters and properties; for example:
  - Database server details
  - Data source details
  - Location of the JDBC driver on the system where the server profile will be created
  - User ID and password for authenticating to the database
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

To generate the database scripts for creating your database objects, you can run the database design tool in silent mode with the **-g** command-line parameter. In this mode, the tool requires input from a database design file that defines the configuration for your DB2 for z/OS database. The database design file must already exist before you generate the database scripts. You can generate the database design file by running the database design tool in interactive mode, or by using a configuration planning spreadsheet:

- You can run the database design tool in interactive mode to generate a database design file. Follow the prompts in the tool to define a DB2 for z/OS database configuration for your stand-alone or network deployment topology.
- The configuration planning spreadsheet is a supplementary artifact that can be downloaded from the IBM Support Portal. The spreadsheet is primarily intended for use with IBM Business Process Manager for z/OS, but can be tailored for use with IBM Business Process Manager on Linux on System z. The configuration planning spreadsheet consists of a number of worksheets that use color coding and comments to assist with data entry, and to help you establish naming conventions. The spreadsheet also includes macros that you can use to generate a database design file, among other files. Before using the spreadsheet, run the database design tool in interactive mode to become familiar with the required configuration options for each of the components.

  You can download the Microsoft Excel spreadsheet from Techdoc WP102075. The data that you require to complete the spreadsheet can span multiple roles, such as systems programmer, product

administrator, and database administrator. Therefore, it is advisable to review the spreadsheet in detail and then work with the relevant personnel to establish naming conventions and to complete the entries. After completing the entries, use the **Save** button on the DataBase Design File worksheet to generate the database design file.

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. If necessary, copy the database design file, which defines your DB2 for z/OS configuration, to the workstation where IBM Business Process Manager is installed, to make the file available for use with the **DbDesignGenerator** command.

2. From the command line, change to the IBM Business Process Manager directory where the **DbDesignGenerator** command is stored:

   cd /*install_root*/util/dbUtils

   For example: cd /opt/IBM/WebSphere/AppServer/util/dbUtils

3. Run the **DbDesignGenerator** command using the following syntax:

   DbDesignGenerator.sh -g *db_design_file*

   where *db_design_file* is the fully qualified name of the database design file. For example:

   DbDesignGenerator.sh -g /tmp/DB2-zOS/W8CELL.nd.dbDesign

4. Review the information that is displayed on the screen, checking that no error messages are displayed. For each database component, the database design tool writes information messages to the screen to indicate that the scripts were generated in the directory specified in the database design file. For example, for the Common database component, you see information similar to the following example:

   [info] The script(s) have been generated in
   C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB

   After the last set of scripts is generated, you see information similar to the following example:

   [info] thanks, quitting now ...

   A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

   Tip: In the database design file, the directories for the SQL scripts are defined by the *ddl_outDir* variable in each component section. If you want to generate the SQL scripts to a set of different

directories, a quick way to do this is to manually update the values of the *ddl_outDir* variables. Then save the database design file, and run the **DbDesignGenerator** command again.

1. Check the specified directory locations to see the database scripts that were generated. Each directory additionally includes a **createDB2.sh** script that you can use to run the SQL.

   To use these scripts to create the IBM Business Process Manager database objects in the DB2 for z/OS subsystem, you must first transfer the scripts to the z/OS system.

2. Use FTP to transfer all the generated database scripts to the z/OS system that contains the installation of DB2. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.

3. Run the **createDB2.sh** script from the z/OS UNIX System Services command environment to create the DB2 for z/OS database objects.

   Note: The **createDB2.sh** script requires execute permissions.

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-zOS-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Setting up databases for Oracle:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

1. Create a table space.

   ```
   SQL> CREATE TABLESPACE [tablespace_name] DATAFILE '[datafile_name]' SIZE 50M AUTOEXTEND ON NEXT 10M
   MAXSIZE UNLIMITED LOGGING;
   ```

2. Create the users. You will specify these users on the Database Configuration - Part 2 page in the Profile Management Tool. The following example assumes you create a BPMDBA user name for the Process Server database, a PDWDBA user name for the Performance Data Warehouse database, and a CMNDBA user name for the Common database:

```
SQL> CREATE USER BPMDBA IDENTIFIED BY [password] DEFAULT TABLESPACE [tablespace_name];
SQL> CREATE USER PDWDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
SQL> CREATE USER CMNDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
```

3. Grant privileges to the users that you specified in the previous step. For example:

```
SQL> GRANT ALL PRIVILEGES TO BPMDBA;
SQL> GRANT ALL PRIVILEGES TO PDWDBA;
SQL> GRANT ALL PRIVILEGES TO CMNDBA;
```

4. Grant execute privileges on DBMS_LOCK. For example:

```
SQL> GRANT execute on DBMS_LOCK to BPMDBA;
SQL> GRANT execute on DBMS_LOCK to PDWDBA;
SQL> GRANT execute on DBMS_LOCK to CMNDBA;
```

Creating database design files for Oracle:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with Oracle:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
* Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  – The location of the database tables.
  – The location of the JDBC driver on the system where the server profile will be created.
  – The user ID and password for authenticating to the database.
* Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
* An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
* Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.

   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and

press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]        WBI_CommonDB : [master] [status = not complete]
(2)[BPC]        WBI_BPC :  [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = not complete]
(6)[SibME]      WBI_BPC_ME :  [status = not complete]
(7)[SibME]      WBI_CEI_ME :  [status = not complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

```
[status] WBI_CommonDB is not complete with 1 remaining item(s):
[ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name(SID) [default=CMNDB] :
Database User name[default=] :
Database schema [default=] :
```

```
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
Database Location(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value
   and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the
   administrative console.

   After you complete the last prompt for the database properties, you see information similar to the
   following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To
   skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input
   for profile creation or topology configuration, you must configure the data source. If you plan to use
   the database design tool to generate SQL, this step is optional.
   If you chose to configure the data source for your selected database type, you see the list of database
   providers for the data source. For example, you might see the following database providers for the
   Oracle database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter.
      After you select this database provider, you see a series of prompts similar to the following
      example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server host[default=] :
      Database server port[default=1521] :

      [info] Please pick one of the following [Oracle driver type(s)] :

      (1)oci8
      (2)thin

      Please enter the number for the Oracle driver type(s)? [default=thin] :
      Data source user name[default=] :
      Data source password[default=] :
      Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
      ] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred
      value and press Enter. If you are asked whether you want to create the database tables during
      configuration, specify **false** if you are using the database design file as input for creating a
      profile, because this option is also available in the Profile Management Tool and causes a conflict.
      If you are using the administrative console to create your deployment environment, you can
      decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   --------------------------------------------------------------------------------

   [info] Please edit any database component with status of 'not complete' for required properties.
   ```

```
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]       WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.advanced.nd.topology**, you must manually configure the **BPM_PerformanceDW**, **BPM_ProcessServer**, and the corresponding **SibMe** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :3
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
```

```
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :4
-------------------------------------------------------------------------------------

[status] BPM_ProcessServer is not complete with 3 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'databaseUser' for DB_USER is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/Oracle-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with Oracle in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

    /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

    Tip: If you see the message `The system cannot find the specified path.` you might have entered the path name incorrectly. Re-enter the path.
    When the database design tool launches successfully, you see information similar to the following example:

    ```
    [info] running DbDesignGenerator in interactive mode...

    [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
    help at any time.
    [info] To accept the given default values, simply press the 'Enter' key.

    [info] Please pick one of the following [design option(s)] :

    (1)Create a database design for Standalone profile or Deployment Environment
    (2)Create a database design for a single component
    (3)Edit an existing database design
    (4)Generate database scripts from a database design
    (5)exit [q]

    Please enter the number for the design option :
    ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

    You are prompted to choose a component, as shown in the following example:

    ```
    [info] Please pick one of the following [component(s)] :

    (1)bpc
    (2)bpcreporting
    (3)bpm_performancedw
    (4)bpm_processserver
    (5)bspace
    (6)cei
    (7)sca
    (8)sibme
    (9)wbi_commondb
    ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

    For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

    You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

    ```
    Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
    ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

    Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name(SID) [default=CMNDB] :
Database User name[default=] :
Database schema [default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
Database Location(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/Oracle-CommonDB for WBI_CommonDB
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

• when you use the profile management tool to create a profile
• when you use the **manageprofiles** command-line utility to create a profile
• when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v Oracle-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating databases and database design files for SQL Server:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

Creating SQL Server databases:

You can create the required databases before you create profiles.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:
   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
      ```

      where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.

   b. To create the Common database:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
      ```

      The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

   Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

   ```
   org.springframework.beans.factory.BeanCreationException: Error creating bean with name
   'message.routingCache'
   defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
   org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
   [com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
   nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
   bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
   com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

   Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
   ```

```
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
    at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
    at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
    at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
    at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
    at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
    at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
    at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
    [...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

When you create your database schemas, you must have a user ID with enough authority to create your tables. After the tables are created, the applications must have enough authority to select, insert, update, and delete information in the tables.

The following table shows the database privileges that are required to access the data store.

Table 92.

Database management system	Minimum privilege required to use the data store tables	Additional privilege required to create the data store tables
Microsoft SQL Server	Configure the SQL Server for SQL Server so that authentication can be based on an SQL server login ID and password. The user ID can own the tables or be a member of a group that has sufficient authority to issue TRUNCATE TABLE statements.	The user ID requires the CREATE TABLE statement privilege.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**..

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:
   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.
   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.
   c. Click the **MSDTC** tab, and then click **Security Configuration**.
   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.
   e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.
   f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

   On Windows Vista and Windows 7:
   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.
   b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.
   c. Right-click **Local DTC** and then select **Properties**.
   d. Click the **Security** tab on the **Local DTC Properties** dialog box.
   e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.
   f. Click **OK** again to close the Properties dialog box, and then close Component Services.
   g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

   a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.
   b. Unzip archive to any folder.
   c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the `x86` folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the `x64` folder.
   d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.
   e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating database design files for SQL Server:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with SQL Server:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
    - The location of the database tables.
    - The location of the JDBC driver on the system where the server profile will be created.
    - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
```

generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]          WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]      WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   ```

```
(9)[SibME]     WBI_SCA_SYS_ME : [status = not complete]
(10)[SibMe]    BPM_PerformanceDW_ME : [status = not complete]
(11)[SibMe]    BPM_ProcessServer_ME : [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database server host[default=] :
   Database User name[default=] :
   Database schema[default=] :
   System user name(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   ```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.
   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server port[default=1433] :

      [info] Please pick one of the following {Do you want to use windows authentication for the
      databases ? (s)] :

      (1) false
      (2) true

      Data source user name[default=] :
      Data source password[default=] :
      MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   -------------------------------------------------------------------------------------

   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
   (2)[BPC]        WBI_BPC :  [status = complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = complete]
   (6)[SibME]      WBI_BPC_ME :  [status = complete]
   (7)[SibME]      WBI_CEI_ME :  [status = complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
   (9)[SibME]     WBI_SCA_SYS_ME :  [status = complete]
   (10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
   (11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
   (12)[save and exit]
   ```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.nd**, after you configure the **BPM_ProcessServer**, you must manually configure the **BPM_PerformanceDW** component for the required database authentication.

    ```
    [info] Please pick one of the following [database component(s)] :

    (1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
    (2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
    (3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
    (4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
    (5)[save and exit]

    Please enter the number for the database component :2
    --------------------------------------------------------------------------------

    [status] BPM_PerformanceDW is not complete with 1 remaining item(s):
    [ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
    required property 'databaseUser' for DB_USER is empty.

    Edit this database component? (y/n) [default=y] :
    ```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/SQLServer-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with SQL Server in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
    - The location of the database tables.
    - The location of the JDBC driver on the system where the server profile will be created.
    - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
```

```
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified
    directory path, or a path that is relative to the current directory from which the database design tool
    is being run. If you have not yet created the directory in your file system, the database design tool
    automatically creates it when the SQL scripts are generated. If the specified directory already exists,
    you can choose to either overwrite its contents or specify another directory.

    Tip: The value that you specify will be saved as a reference in the database design file when this file
    is generated.

    You are prompted to select the database type that you are configuring; for example:

    ```
    [info] Please pick one of the following [database type(s)] :

    (1)DB2-distributed
    (2)DB2-zOS
    (3)Oracle
    (4)SQL Server
    ```

5. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database
    properties. These prompts vary based on the database type.

    For example, after you select this database type for configuration of the Common database, you see
    a series of prompts similar to the following example:

    ```
    [info] Please enter the values for the properties in the database objects section.
    Database name[default=CMNDB] :
    Database server host[default=] :
    Database User name[default=] :
    Database schema[default=] :
    System user name(this is required ONLY for creating the database as a part of standalone profile
    creation.)[default=] :
    System password(this is required ONLY for creating the database as a part of standalone profile
    creation.)[default=] :
    ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value
    and press Enter.

    The administrative security prompt (if present) refers to the user name and password for the
    administrative console.

    After you complete the last prompt for the database properties, you see information similar to the
    following example:

    ```
    [info] You have completed database objects section properties needed for database scripts generation.

    To skip data source properties, enter 's'; or enter anything else to continue :
    ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To
    skip this configuration and accept the defaults, type **s** and press Enter.

    Tip: If you plan to use the database design tool to generate a database design file for use as input
    for profile creation or topology configuration, you must configure the data source. If you plan to use
    the database design tool to generate SQL, this step is optional.
    If you chose to configure the data source for your selected database type, you see the list of database
    providers for the data source. For example, you might see the following database providers for the
    SQL Server database type:

    ```
    [info] Please pick one of the following [database provider(s)] :

    (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
    ```

    a. Type the appropriate number to select a database provider for the data source, and press Enter.
        After you select this database provider, you see a series of prompts similar to the following
        example:

        ```
        [info] Please enter the values for the properties in the data source properties section.
        Database server port[default=1433] :
        ```

```
[info] Please pick one of the following {Do you want to use windows authentication for the
databases ? (s)] :

(1) false
(2) true

Data source user name[default=] :
Data source password[default=] :
MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
```

> **Note:** The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/SQLServer-CommonDB for WBI_CommonDB
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v SQL Server-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Configuring the network deployment environment using the configureNode command:

To configure a typical network deployment environment, you can use the **configureNode** command instead of using the Profile Management Tool and Deployment Environment wizard or the **manageprofiles** and **wsadmin** commands. This command provides limited customization by using a properties file, and creates a ready-to-use environment. You can also use **configureNode** later to extend the deployment environment.

Restriction: This command is not supported if your database type is DB2 for z/OS.

Important: The **configureNode** command cannot be run twice on one machine without first deleting the profile that was created. To run the **configureNode** command a second time, first delete the profile.

Creating the deployment environment using the configureNode command:

You can use the **configureNode** command to create a typical network deployment environment. The goal of this command is to provide a ready-to-use environment. The only parameters that can be customized are provided in a properties file.

Restriction: This command is not supported if your database type is DB2 for z/OS.

You must have installed the product and created all the databases that are specified in the properties file.

Important: You must have already installed the database software and created the databases (but do not create tables). You must also have created all the users that you specify in the properties file. Make sure the users have the installation privileges listed in Database privileges.

For your SQL Server database server:
- Make sure that the username and schema exist before the configuration is done. The schema value should be the default schema for the user chosen.
- If connections to the database will be made by the current Windows user that the server is running under, the SQL Server must have **Windows authentication mode** or **SQL Server and Windows Authentication mode** enabled, as specified through Microsoft SQL Server Management Studio.

Restriction: Run **configureNode** commands sequentially; do not try to run the command on multiple machines at the same time.

The **configureNode** command uses default ports to create the deployment manager. You cannot customize the ports using this command. The parameters listed in the sample files are the only parameters that can be customized. Make sure that no other profiles that are configured with default ports are started on the same machine.

The **configureNode** command creates the following network deployment topology:

- A single cell environment
- The environment contains the number of cluster members that you specify in the properties file
- The environment uses the Remote Messaging, Remote Support, and Web topology pattern, which includes the following four clusters:
  - Messaging infrastructure cluster
  - Supporting infrastructure cluster
  - Application deployment target cluster
  - Web application cluster

The command performs the following tasks:

- Creates the deployment manager node based on the values in the deployment manager properties file and starts the deployment manager.
- Creates the deployment environment definition.
- Creates a custom node based on the values in the custom node properties file.
- Federates the node and adds the node to the deployment environment.
- Generates the deployment environment.
- Creates the database tables. (You must already have created the databases. See "Before you begin" for instructions.)
- Runs the bootstrap utility to load the Process Server database with system information.
- Configures Business Space and Process Portal on the web application cluster.

The default port is used to create the deployment manager. If a deployment manager is already running on the machine when you run **configureNode**, creating the deployment environment fails. If a deployment manager has already been created but is not running, you must change the port of one of the deployment managers or you might get a port conflict error when you start the other deployment manager.

To create the deployment environment for the first time, complete the following steps:

1. On the machine where you want to create the deployment environment, locate the sample properties file: *install_root*/util/ndUtils/samples/.
2. Copy the sample files and modify the files to reflect your environment. For example, for a deployment manager for IBM BPM Standard for Process Server, choose the `sample_std_ps_dmgr.properties` file.

   For each database that you want to create, copy the database parameters section and specify the database name, user name, password, and schema name. The Process Server database, Performance Data Warehouse database, and Common database are required, and they must have different names.

   For more information about the available properties, read the comments in the sample files, or see the **configureNode** command reference and the examples.

   Restriction: The parameters listed in the sample files are the only parameters that can be customized.
3. Run the **configureNode** command, passing it the names of the two files you created. The custom node file is optional, but if you do not include it, only the deployment manager is created. For example:

   install_root/**util/ndUtils/configureNode.sh -dmgr_response** *my_dmgr_response_file.properties* **-response** *node01_response_file.properties*

Note: If you receive the **Failed to perform Security setting update** error, check to ensure that the global IP address has not been appended to **127.0.0.1 localhost** in the hosts file. For example: **127.0.0.1 localhost example.ibm.com**.

You now have a deployment manager, a custom node, and a deployment environment that use the Remote Messaging, Remote Support, and Web topology pattern.

Messages are recorded in the file *install_root*/logs/config/configureNode.log.

Tip: After you have configured a network deployment environment, if you test the data store connection (for example, in the administrative console, on the page **Resources** > **JDBC** > **Data sources**), you get a message saying that the test connection operation failed with the exception com.ibm.wsspi.runtime.variable.UndefinedVariableException: Undefined Variable WAS_INSTALL_ROOT. This does not necessarily indicate that there will be a problem accessing the data source at run time. Ensure that the location of your JDBC driver files is accessible to every client that must use the data source, and configure the variable with the full path of that location. Disregard the test connection error unless you are also experiencing trouble connecting to the data store at run time. For additional information, see the WebSphere Application Server documentation about the test connection service.

Important: If you use additional servers with unique ports, WebSphere Application Server does not automatically configure the virtual host for the server. Specifically, WebSphere Application Server does not automatically add the host alias ports to a virtual host. However, you can use the administrative console to add a new host alias for each of the ports that are used by the new server. For more information, see the WebSphere Application Server documentation about configuring virtual hosts.

Related concepts:

➡ Virtual hosts

Related tasks:

➡ Configuring virtual hosts

Related reference:

➡ Test connection service

Extending the deployment environment using the configureNode command:

After you have created a deployment environment using the **configureNode** command, you can run the command at a later time to extend the deployment environment.

You need the following prerequisites before running the **configureNode** command:
- You must have installed the product on the machine where you want to extend the deployment environment.
- The deployment manager must be running.
- You must have created the deployment environment by running the **configureNode** command.

Restriction: Run **configureNode** commands sequentially; do not try to run the command on multiple machines at the same time.

1. On the machine where you want to extend the deployment environment, locate the sample custom node files: *install_root*/util/ndUtils/samples/
2. Copy the sample file that is most similar to the properties file that you need. For example, to extend the deployment environment for IBM BPM Standard for Process Server, choose the sample_std_ps_node.properties file.

   Modify the new custom node file to reflect your environment, including the details of the deployment manager.

For more information about the available properties, read the comments in the sample files, or see the **configureNode** command reference and the examples.

Restriction: The parameters listed in the sample files are the only parameters that can be customized.

3. Run the **configureNode** command, passing it the name of the sample file. For example:

install_root/util/ndUtils/configureNode.sh -response *node01_response_file.properties*

Note: If you receive the **Failed to perform Security setting update** error, check to ensure that the global IP address has not been appended to **127.0.0.1 localhost** in the hosts file. For example: **127.0.0.1 localhost example.ibm.com**.

You have extended the deployment environment.

Messages are recorded in the file *install_root*/logs/config/configureNode.log.

Tip: After you have configured a network deployment environment, if you test the data store connection (for example, in the administrative console, on the page **Resources** > **JDBC** > **Data sources**), you get a message saying that the test connection operation failed with the exception com.ibm.wsspi.runtime.variable.UndefinedVariableException: Undefined Variable WAS_INSTALL_ROOT. This does not necessarily indicate that there will be a problem accessing the data source at run time. Ensure that the location of your JDBC driver files is accessible to every client that must use the data source, and configure the variable with the full path of that location. Disregard the test connection error unless you are also experiencing trouble connecting to the data store at run time. For additional information, see the WebSphere Application Server documentation about the test connection service.

Important: If you use additional servers with unique ports, WebSphere Application Server does not automatically configure the virtual host for the server. Specifically, WebSphere Application Server does not automatically add the host alias ports to a virtual host. However, you can use the administrative console to add a new host alias for each of the ports that are used by the new server. For more information, see the WebSphere Application Server documentation about configuring virtual hosts.

Related concepts:

⮕ Virtual hosts

Related tasks:

⮕ Configuring virtual hosts

Related reference:

⮕ Test connection service

Configuring profiles and creating a network deployment environment:

After you install the product, you must create or augment a deployment manager and one or more custom profiles to define the runtime environment. Before starting the deployment manager, you must have configured the databases that are to be used with IBM Business Process Manager.

Creating or augmenting network deployment profiles:

If you used the **configureNode** command to create and configure your deployment environment, no further configuration is required. Otherwise, you must create or augment a deployment manager profile and one or more custom profiles before creating the deployment environment. Using profiles, you can have more than one runtime environment on a system, without having to install multiple copies of IBM Business Process Manager.

Configuring a network deployment environment with a DB2 database server:

You can configure a network deployment environment for IBM Business Process Manager using a DB2 database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
* Specify a database design file to be used for the database configuration.
* Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
* Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     * Start the tool from the First steps console.
     * Run the command *install_root***/bin/ProfileManagement/pmt.sh**.
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
  7. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- key.p12: Contains the default personal certificate.
- trust.p12: Contains the signer certificate from the default root certificate.
- root-key.p12: Contains the root signing certificate.
- default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with a DB2 database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default

language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12`

file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.

    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root/properties/portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.
      - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

    - **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Profile Summary step.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create a deployment manager profile.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the `-templatePath` option).

   Templates for each profile are located in the `install_root`/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the `manageprofiles` parameters topic.

3. To use the `-responseFile` parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the `install_root`/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with a DB2 database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application

Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

        – In the **Path** field, enter the directory path to the existing certificate.

        – In the **Password** field, enter the password for the certificate

        – In the **Keystore type** field, select the keystore type for the certificate you are importing.

        – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

        – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do

not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with a DB2 database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.

- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones.

If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.

- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
        – Select **Production** if the server is to be used in a production capacity.
        – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
        – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the `manageprofiles` command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.

- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

6. If you selected **Typical** profile creation, skip to the Federation step.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.

- The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

Processing associated with federating the node as part of custom profile creation:

- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12`

file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.

    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

    Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

    - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.

    - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

    Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
3. Shut down any servers associated with a profile you plan to augment.
4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for

commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

- In the **Server name** field, enter a name for the server or accept the default value.

- In the **Host name** field, enter a name for the host or accept the default value.

- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

Important:

Select **Federate this node later** if any one of the following situations is true:

- You plan to use this custom node as a migration target.
- Another profile is being federated. (Node federation must be serialized.)
- The deployment manager is not running or you are not sure if it is running.
- The deployment manager has the SOAP connector disabled
- The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
- The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
- The deployment manager does not have a JMX administrative port enabled.
- The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

Processing associated with federating the node as part of custom profile creation:

- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.
4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

```
        profile_root/bin/startManager.sh
```
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.
1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

       ```
       profile_root/bin
       ```
2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

       ```
       ./addNode.sh deployment_manager_host deployment_manager_SOAP_port
       ```

   Run the following command from the command line if security is enabled:

       ```
       ./addNode.sh deployment_manager_host deployment_manager_SOAP_port -username
       userID_for_authentication -password password_for_authentication
       ```

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

       ```
       ADMU0003I: Node DMNDID2Node03 has been successfully federated.
       ```

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

➮ Add managed nodes (WebSphere Application Server)

Configuring a network deployment environment with a DB2 for z/OS database server:

You can configure a network deployment environment for IBM Business Process Manager using a DB2 Universal Database for z/OS database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root/profiles/profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        – In the **Path** field, enter the directory path to the existing certificate.
        – In the **Password** field, enter the password for the certificate
        – In the **Keystore type** field, select the keystore type for the certificate you are importing.
        – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with a DB2 for z/OS database server using the Profile Management Tool on AIX:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
    - Start the tool from the First steps console.
    - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

    a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

   - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

     – In the **Path** field, enter the directory path to the existing certificate.

     – In the **Password** field, enter the password for the certificate

     – In the **Keystore type** field, select the keystore type for the certificate you are importing.

     – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

     – Click **Next** to display the Security Certificate (Part 2) page

   When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The

password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Process Server Configuration page, set the values for the following parameters.

- **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.

Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the `-templatePath` option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the `manageprofiles` parameters topic.

3. To use the `-responseFile` parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with a DB2 for z/OS database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

8. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

9. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

10. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

11. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

12. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

13. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root/properties/portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with a DB2 for z/OS database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
8. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
9. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.

- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

10. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

11. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        - In the **Path** field, enter the directory path to the existing certificate.
        - In the **Password** field, enter the password for the certificate
        - In the **Keystore type** field, select the keystore type for the certificate you are importing.
        - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

12. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the java.security file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - key.p12: Contains the default personal certificate.
    - trust.p12: Contains the signer certificate from the default root certificate.
    - root-key.p12: Contains the root signing certificate.
    - default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

13. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do

not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
        – Select **Production** if the server is to be used in a production capacity.
        – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
        – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.

- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
6. If you selected **Typical** profile creation, skip to the Federation step.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:

- You plan to use this custom node as a migration target.
- Another profile is being federated. (Node federation must be serialized.)
- The deployment manager is not running or you are not sure if it is running.
- The deployment manager has the SOAP connector disabled
- The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
- The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
- The deployment manager does not have a JMX administrative port enabled.
- The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

Processing associated with federating the node as part of custom profile creation:
- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.

- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

- `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
- `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Custom.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
3. Shut down any servers associated with a profile you plan to augment.
4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   • You plan to use this custom node as a migration target.
   • Another profile is being federated. (Node federation must be serialized.)
   • The deployment manager is not running or you are not sure if it is running.
   • The deployment manager has the SOAP connector disabled
   • The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   • The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   • The deployment manager does not have a JMX administrative port enabled.
   • The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:

- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

  Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do

not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.
3. Find the appropriate template to use for the augmentation.

Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

- `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
- `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

4. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

5. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Custom.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

6. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

   ```
   manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
   -profileName MyProfileName
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    profile_root/bin/startManager.sh
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

    profile_root/bin
2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

    ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port*

   Run the following command from the command line if security is enabled:

    ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port* -username
    userID_for_authentication -password *password_for_authentication*

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

    ADMU0003I: Node DMNDID2Node03 has been successfully federated.

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

⬆ Add managed nodes (WebSphere Application Server)

Creating and configuring DB2 for z/OS databases after network deployment profile creation:

After creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

DB2 for z/OS authorization prerequisites:

Before you create the IBM Business Process Manager databases, you must ensure that the required authorizations are granted for your DB2 for z/OS version. Also ensure that the appropriate storage groups and buffer pools are assigned, and configure clustering if necessary.

User authorization requirements for DB2 for z/OS

Ask your DB2 for z/OS system administrator to check the authorizations that have been granted to ensure that you have not granted more authority than necessary to any user ID. It can be tempting to grant DB2 SYSADM authority to the JCA authentication aliases in order to avoid possible problems with DB2 security during the configuration. The WebSphere administrator ID should not require more than DBADM authority to define the IBM Business Process Manager databases.

The following storage group, database, and buffer pool GRANT permissions are provided by default, for the WebSphere administrator identified as *#DB_USER#*. These permissions are available in the createDatabase.sql database script that is generated by the database design tool:

```
GRANT USE OF STOGROUP #STOGRP# TO #DB_USER# WITH GRANT OPTION;
GRANT DBADM ON DATABASE #DB_NAME# TO #DB_USER#;
GRANT USE OF ALL BUFFERPOOLS TO #DB_USER#;
```

The following GRANT permission might be required to permit the *#DB_USER#* user to create sequences and stored procedures with a schema qualifier of *#SCHEMA#*:

```
GRANT CREATEIN,ALTERIN,DROPIN ON SCHEMA #SCHEMA# TO #DB_USER# WITH GRANT OPTION;
```

The following permissions are also required:

```
GRANT CREATE ON COLLECTION #SCHEMA# TO #DB_USER#;
GRANT BINDADD TO #DB_USER#;
```

Authorization requirements for views on DB2 for z/OS V10

If you are planning to use DB2 for z/OS V10, additional permissions are required for views in the database:

- Before you run the SQL to define views, you might need to set the DBACRVW subsystem parameter to YES.

  This setting ensures that WebSphere administrator IDs with DBADM authority on database *#DB_NAME#* can create views for other user IDs.

- On DB2 for z/OS V10, the WebSphere administrator ID must be specifically granted access to views, because access is not implicitly granted to users with DBADM authority on the database. Individual GRANT statements or a Resource Access Control Facility (RACF) group can be used to provide access to views in DB2 for z/OS V10. Ask your DB2 for z/OS administrator to provide this access by using either of the following methods:
  - Issue an explicit GRANT statement for each view. For example, the following sample GRANT statements can be issued for user ID WSADMIN:

```
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_SERVICE TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.APPLICATION_COMP TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG_B TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY_LDESC TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_CPROP TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_DESC TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.EVENT TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.MIGRATION_FRONT TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_INSTANCE TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPLATE TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPL_ATTR TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROPERTY TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROP_TEMPL TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.SHARED_WORK_ITEM TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_CPROP TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_DESC TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_HISTORY TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_DIST_TARGET TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_LDESC TO WSADMIN WITH GRANT OPTION;
       GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_ITEM TO WSADMIN WITH GRANT OPTION;
```

– Define a RACF group that corresponds to the schema name for the views, and connect the
  WebSphere administrator ID to the RACF group. For example, you can define a RACF group named
  S1CELL, and connect user WSADMIN to it, as follows:

```
INFORMATION FOR GROUP S1CELL
 SUPERIOR GROUP=ZWPS   OWNER=ZWPS   CREATED=07.144
 INSTALLATION DATA=OWNED BY EMP SERIAL 009179, SITE ABCUK
 NO MODEL DATA SET
 TERMUACC
 NO SUBGROUPS
 USER(S)= ACCESS=  ACCESS COUNT=  UNIVERSAL ACCESS=
   WSADMIN   CONNECT   000000     NONE
    CONNECT ATTRIBUTES=NONE
    REVOKE DATE=NONE     RESUME DATE=NONE
```

Using the configuration planning spreadsheet to define authorizations

If you have downloaded the configuration planning spreadsheet for use, you can alternatively use this
spreadsheet to generate the GRANT permissions that are required for users and for DB2 for z/OS V10
views (as identified in the preceding sections in this topic). The configuration planning spreadsheet is
available from Techdoc WP102075 in the IBM Support Portal.

The Database worksheet in the spreadsheet lists a set of sample SQL statements that can be used to create
the databases and storage groups. Additionally, the GRANT permissions that are required to authorize
the WebSphere administrator and to provide access to DB2 for z/OS V10 database tables are provided.
When you specify the user and database object names on the BPMVariables worksheet of the spreadsheet,
these values are propagated to the Database worksheet, and are used to complete the CREATE and
GRANT statements with the appropriate values.

Ask your DB2 for z/OS system administrator to use the relevant CREATE statements to create the databases and storage groups, and to use the GRANT statements to authorize the WebSphere administrator. For more information about using the artifacts generated from the spreadsheet, see the accompanying PDF document in the Techdoc.

Storage group assignments and buffer pool usage

Ask your DB2 for z/OS system administrator to check the storage group assignments and buffer pool usage. Incorrect storage group assignment and buffer pool usage might not show up as an error message in a log, but might cause problems later. It is better to resolve such problems now rather than when the system has been handed over for use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.

Clustering requirements

If you intend to configure clustering, your DB2 for z/OS system must be running in data-sharing mode.

Related tasks:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

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You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating databases in the DB2 for z/OS subsystem:

When you use the database design tool (`DbDesignGenerator`) to define your database configuration, you can generate the database scripts that are required for creating the databases for the IBM Business Process Manager components.

You can use various tools to run these database scripts:

- When you run the database design tool to generate the database scripts, the **createDB2.sh** script is also generated. You can use **createDB2.sh** to run the database scripts.
- You can use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to run the database scripts.

Choosing which tool to use

You can choose one tool over another based on experience and familiarity, or personal preference. Your organization might also have implemented standards or conventions for the tools used to create DB2 for z/OS objects, particularly in a production environment.

Considerations for choosing the createDB2.sh script

- **createDB2.sh** can create all your database objects in one simple execution of the tool, so it is a good choice if this is your first server implementation.
- **createDB2.sh** runs the database scripts that the database design tool (**DbDesignGenerator**) generates.
- **createDB2.sh** runs the SQL for each component in the correct sequence.
- **createDB2.sh** creates database objects according to a naming convention that you define.
- **createDB2.sh** organizes the layout of database objects across DB2 for z/OS databases.
- **createDB2.sh** issues GRANT permissions to database, storage group, and buffer pool objects.
- **createDB2.sh** automatically completes customization of the service integration bus Data Definition Language (DDL).
- **createDB2.sh** runs in a UNIX System Services environment.
- **createDB2.sh** produces an audit trail of the objects that it creates.

Considerations for choosing other tools

- You might prefer to use the DB2 command line processor to run the SQL statements in the UNIX Systems Services environment. You must first run the **createDB2.sh** script in a mode that bypasses execution of the SQL statements and instead consolidates them into two `.sql` files. You can then run these files by using the command line processor.
- There is no restriction on the naming or organization conventions that apply to the database objects other than the standard database subsystem restrictions.
- Some tools can be run from a z/OS environment.
- The tools can produce an audit trail of the DB2 database commands that have been issued.

Related tasks:

"Creating database design files and database scripts (AIX network deployment)" on page 614
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Configuring the DB2 command line processor:

Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

Ensure that a properties file, for example, `clp.properties`, exists for the DB2 command line processor. If required, you can create your own properties file by using the sample properties file that is available in the directory where the command line processor is installed. For more information, see your DB2 for z/OS documentation.

Complete the following configuration steps in the z/OS UNIX System Services environment from which the **createDB2.sh** script will be run:

1. Configure the DB2 command line processor for each user ID that will work with DB2 for z/OS from the command line. You can update the personal or shared user profiles as follows:

   - Modify the CLASSPATH environment variable to include the `clp.jar` file.
   - Use the CLPPROPERTIESFILE environment variable to define the fully qualified name of the properties file for the command line processor.
   - Define the **db2** command as an alias for the command that starts the command line processor.
   - Specify the `DB2JccConfiguration.properties` file that defines the JDBC properties to be applied to the command line processor.

   You can use the following syntax to add the required entries to the `.profile` or `/etc/profile` file:

   ```
   export CLPHOME=clp_install_dir
   export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
   export CLPPROPERTIESFILE=clp_properties_file_path
   alias db2="java -Ddb2.jcc.propertiesFile=
   /file_path/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
   ```

   For example:

   ```
   export CLPHOME=/shared/db2910_base
   export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
   export CLPPROPERTIESFILE=/wasv8config/clp.properties
   alias db2="java -Ddb2.jcc.propertiesFile=
   /wasv8config/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
   ```

2. In the properties file for the command line processor, define alias names that can be used to connect to the DB2 for z/OS server. An alias name definition includes the following entities:

   - A URL that specifies the domain name or IP address of the database server, the port on which the server listens, the DB2 location name defined during installation, and the property for the JDBC connection. The URL can take the form: *server:port/database* property=*value*. The port and property values are optional, and the DB2 location name must be specified in uppercase characters.
   - A user ID and an associated password that can be used to connect to the DB2 server. This user ID should correspond to the user ID (with SYSADM authority) that the DB2 system administrator uses to run the **createDB2.sh** script.

   You can add the required alias name entries to the properties file by using the following syntax:

   DB2ALIASNAME=URL,*user_ID*,*password*

   For example:

   ```
   DSNXWBD=localhost:9446/DSNXWBD,SYSADM1,SYSPWRD1
   ```

   Tip: When you define a *DB2ALIASNAME* value in the properties file, ensure that the correct connection details are specified to avoid connecting to the wrong database and inadvertently overwriting its contents.

3. Configure the DB2 DBACRVW subsystem parameter to enable user IDs with DBADM authority on a database to perform the following tasks for other user IDs: create views on tables in the database, create aliases for tables, and create materialized query tables. You can use the installation Command List (CLIST) to access the DSNTIPP ISPF panel and update the DBADM CREATE AUTH field to set DB2 ZPARM DBACRVW=YES.

Use the **createDB2.sh** script to either run the SQL to create the database objects for a specified database, or to consolidate the SQL statements into two `.sql` files that you can run later using other database tools.

Related tasks:

"Creating DB2 for z/OS database objects using the createDB2.sh script"
After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 711
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating DB2 for z/OS database objects using the createDB2.sh script:

After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

You can also use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to create and populate databases.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a network deployment environment, you might define two DB2 for z/OS databases, where one database is used for the Common database component, which is cell-scoped, and another database is used for all the other components, which are cluster-scoped.

- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.

- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.

- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.

- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.

- Grant execute permissions to the **createDB2.sh** script.

- Create or augment the profile.

- Configure the DB2 command line processor.

The number of databases that you create for your IBM Business Process Manager installation can depend on your topology, and how you want to distribute your database objects across the DB2 for z/OS subsystem. Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created. For example:

- To create a single database, you can run **createDB2.sh** once from a directory that contains all the database scripts that were generated for all the IBM Business Process Manager components.

- To create multiple databases at the cell level and cluster levels, you can run **createDB2.sh** once from each directory that contains the database scripts required to create the database objects for the cell and clusters.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   ```
   cd /u/work/S4CELLDB
   ```

2. Run the **createDB2.sh** script by using the following syntax:

   ```
   createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate
   -DBVCat volume_catalog -DBUser DB_user_ID -RunSQL
   ```

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
   Specifies the name of the database to be created.

   -DBSto
   Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
   Creates the database.

   -DBVCat
   Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

   -DBUser
   Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

   -RunSQL
   Runs the SQL statements that create the database objects.

   For example:

   ```
   createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
   -DBUser S4ADMIN -RunSQL
   ```

   For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

3. Review the messages that are displayed in the console, checking that no error messages are displayed.

   Tip: The first time that you run **createDB2.sh** to create the database, you see a few messages because the script first attempts to drop the database, which at that stage does not yet exist. These messages can be ignored, and subsequent invocations of **createDB2.sh** for the same database will not produce such messages.

   When the script has finished running, you can also review the z_output.txt file, which provides an audit trail of the operations completed and status messages. This file is stored in the directory from which you ran the **createDB2.sh** script.

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 707
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (AIX network deployment)" on page 614
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using the DB2 command line processor:

When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

You can also run these .sql files by using any other database tool of your choice, such as SPUFI or DSNTEP2.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a network deployment environment, you might define two DB2 for z/OS databases, where one database is used for the Common database component, which is cell-scoped, and another database is used for all the other components, which are cluster-scoped.

- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.

- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.

- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.

- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.

- Grant execute permissions to the **createDB2.sh** script.

- Create or augment the profile.

- Configure the DB2 command line processor.

Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   `cd /u/work/S4CELLDB`

2. Run the **createDB2.sh** script by using the following syntax:

   `createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate -DBVCat volume_catalog -DBUser DB_user_ID`

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
   Specifies the name of the database to be created.

   -DBSto
   Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
   Creates the database.

   -DBVCat
   Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

   -DBUser
   Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

   Tip: By omitting the **-RunSQL** parameter, you bypass the execution of the SQL statements that create the database objects, and instead consolidate the statements into two `.sql` files.

   For example:

   `createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP -DBUser S4ADMIN`

   For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

   The z_schema.sql and z_schemaProc.sql files, which hold the consolidated SQL statements, are generated in the directory from which you ran the **createDB2.sh** script. The z_schemaProc.sql file contains SQL statements for stored procedures, and is generated in addition to z_schema.sql because stored procedures require the "at" sign (@) as a statement termination character when running the command line processor.

3. Run the DB2 command line processor in batch mode to execute the SQL in the z_schema.sql file:

   `db2 -f /createDB2.sh_path/z_schema.sql`

   For example:

   `db2 -f /u/work/S4CELLDB/z_schema.sql` The command line processor reads the data in the file, and processes the commands in the file consecutively.

4. Run the DB2 command line processor again to execute the SQL in the z_schemaProc.sql file, and additionally use the **-td** parameter to define @ as the statement termination character:

   `db2 -td@ -f /createDB2.sh_path/z_schemaProc.sql`

   For example:

   `db2 -td@ -f /u/work/S4CELLDB/z_schemaProc.sql`

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 707
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (AIX network deployment)" on page 614
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using SPUFI or DSNTEP2:

You can use tools such as SPUFI or DSNTEP2 to run the database scripts that are used to create the DB2 for z/OS database objects for your configuration.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, which are required to create the database, into that directory.

  Tip: The generated scripts that you use to create the database objects can either be in ASCII or EBCDIC format. Typically, the generated `.sql` files are in ASCII format, and the equivalent `.ddl` files are in EBCDIC format.

- Use FTP to transfer the database scripts to the z/OS system that contains the DB2 for z/OS installation.
- Create or augment the profile.

You can create the database objects by using the tool of your choice. For example:

SPUFI A utility that runs SQL scripts from z/OS. SPUFI uses EBCDIC input.

DSNTEP2
          A sample dynamic SQL program provided with the DB2 for z/OS product.

1. Assign the appropriate read permissions to the SQL scripts; for example:

   ```
   chmod 644 createTable_AppScheduler.sql
   ```

2. If the tool that you want to use to view, edit, and run the scripts requires the scripts to be in EBCDIC format, rather than ASCII format, use the **iconv** command to convert the files to EBCDIC. For example:

   ```
   iconv —t IBM-1047 —f ISO8859-1 createTable_AppScheduler.sql >
   createTable_AppScheduler_EBCDIC.sql
   ```

   Important: After converting from ASCII to EBCDIC, check that no SQL statements exceed 71 characters in length. Longer lines will lead to line truncation and invalid statements when copying to fixed-width MVS data sets.

Tip: If you have converted the files from ASCII format to EBCDIC, but need to run the files in ASCII format, you can also use **iconv** to convert the files back to ASCII. For example:

```
iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >
createTable_AppScheduler.sql
```

3. Edit the values in the createDatabase.sql and dropDatabase.sql files according to your requirements. The following symbolic variables need to be updated:

```
@STOGRP@     = DB2 Storage group name
@DB_NAME@    = DB2 Database name
@SCHEMA@     = DB2 SQLID (Schema Qualifier)
@BPTABLE4K@ = Buffer Pool of 4k Size
@BPINDEX@    = Buffer Pool Index
@VOLUMES@    = DB2 comma separated list of volume-ids
@VCAT@       = DB2 integrated catalog facility name
@DB_USER@    = The user ID which will be used to create the database objects
```

4. To create database objects outside of the z/OS UNIX environment by using SPUFI or DSNTEP2, copy the customized database scripts from z/OS UNIX to a partitioned data set.

5. Run the customized scripts by using the tool of your choice.

   Tip: If you previously ran the **createDB2.sh** script and chose to bypass execution of the SQL scripts, you can also run the consolidated SQL files (z_schema.sql and z_schemaProc.sql), which were generated.

6. Verify that the database tables are created successfully with no errors by inspecting the output.

Related tasks:

"Creating database design files and database scripts (AIX network deployment)" on page 614
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 711
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating the messaging engine data stores:

If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Before you create and run the database scripts:
- Create a cluster.
- Decide which service integration bus components you want to create in your network deployment configuration.

You must create and populate a messaging engine data source for each of the following components that you configure:
- Service Component Architecture system bus
- Service Component Architecture application bus
- Process Server
- Performance Data Warehouse
- Common Event Infrastructure

You can create all the database objects in one or more databases in the DB2 for z/OS subsystem. Take note of the following considerations:

- All messaging engines use the same table names. Therefore, the tables for each messaging engine require a unique schema qualifier.
- When you use the database design tool to define the database configuration for each messaging engine, you can specify a prefix for table space names:
  - If you intend to use a single database for all the messaging engines, specify a unique table space prefix for each messaging engine to make its table space name unique within the database.
  - If you intend to use a separate database for each messaging engine, the table space prefixes that you specify for the messaging engines can be identical or unique.

1. For each messaging engine, complete the following steps to generate the required database scripts:

   a. Run the database design tool (**DbDesignGenerator**) from the *install_root*/util/dbUtils directory.

   b. Select option **(2)Create a database design for a single component**, and then select the appropriate option for the messaging engine.

   c. Complete the remaining prompts in the tool to define the database configuration and to generate the scripts.

   Tip: As an alternative to running the database design tool multiple times to generate scripts for each of the messaging engines, you can run the tool once using option **(1)Create a database design for Standalone profile or Deployment Environment**. With this option, you can define the database configuration and generate database scripts for the following components in a single pass through the tool: Common database, Business Process Choreographer, Performance Data Warehouse, Process Server, Business Space, and the six messaging engines.

2. Run the generated DDL scripts using the tool of your choice.

The messaging engine data stores are created.

Related tasks:

"Creating database design files and database scripts for a specific component with DB2 for z/OS in a network deployment environment" on page 620
You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

"Creating database design files and database scripts for deployment environments with DB2 for z/OS" on page 614
Use the database design tool to generate a design file that is used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool also generates database scripts that you can use to create your database tables.

Granting table privileges to the JCA authentication alias user ID:

If the schema name you are using is not the same as the JCA authentication alias user ID, you must grant a subset of DB2 for z/OS privileges to the JCA authentication alias user ID.

The database scripts for the service integration bus (SIB) contain commented GRANT commands that you can use as a basis for granting access to the SIB tables. However, the other IBM Business Process Manager components do not supply GRANT statements.

Use a schema name that is different from the JCA authentication alias to prevent the alias user ID from having the authority to drop tables. (The authority to drop tables is implicitly granted to the creator, that is, the schema.) Note that it does not make sense to grant a privilege like DBADM to the JCA authentication alias user ID because DBADM also has the ability to drop tables.

If you want IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the database scripts and editing them to construct GRANT commands from the CREATE commands. You can create GRANT commands like the one shown in the following example:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

where *userid/sqlid* is the JCA authentication alias user ID.

Note: Typically, the creator of a database object has implicit use of that object without requiring additional GRANT permissions. However, for DB2 for z/OS Version 10, additional GRANT permissions might be required for views because access to views is not implicitly granted to the creator.

Setting the correct schema name for the messaging engines:

To ensure that the service integration bus (SIB) messaging engines can access the appropriate DB2 for z/OS tables, the correct schema name must be set for the messaging engines. You can use the administrative console to change the schema names.

Start the server.
1. Log in to the administrative console.
2. Navigate to **Service Integration** > **Buses**.
3. For each messaging engine:
   a. Select **Messaging engines**, and then click the name that is displayed.
   b. Click **Message store**.
   c. Change the value of **Schema name** to the name used when creating the DB2 for z/OS tables for this messaging engine.
   d. Click **Apply**.
   e. Save your configuration changes.
4. Verify that the messaging engines can be started:
   a. Log out of the administrative console.
   b. Stop, and then restart the server.
   c. Look in the output of the server log for successful SIB messaging engine startup messages. For example:
      ```
      BBO00222I: "BusName"
      CWSID0016I: Messaging engine MessagingEngineName is in state Started.
      ```

Configuring a network deployment environment with an Oracle database server:

You can configure a network deployment environment for IBM Business Process Manager using an Oracle database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default

language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

  Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root/properties/portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).

- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/`profiles`/`profile_name`.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Process Server Configuration page, set the values for the following parameters.

- **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Profile Summary step.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with an Oracle database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.

- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.
11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate

- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with an Oracle database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
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    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

- In the **Path** field, enter the directory path to the existing certificate.
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- `key.p12`: Contains the default personal certificate.
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- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

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If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the `ws_ant` script detailed in this topic.

15. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.
      - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
  2. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
  6. If you selected **Typical** profile creation, skip to the Federation step.
  7. Advanced: On the Profile Name and Location page, perform the following steps:

a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

Processing associated with federating the node as part of custom profile creation:

- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  – In the **Path** field, enter the directory path to the existing certificate.
  – In the **Password** field, enter the password for the certificate
  – In the **Keystore type** field, select the keystore type for the certificate you are importing.
  – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  – Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones.

If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.

- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.

   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.

- **PSAdv_StandAlone_DB2_DATASERVER.response**: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- **PCStd_StandAlone_MSSQLSERVER.response**: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- **PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response**: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- **PSAdv_Dmgr_DB2_DATASERVER.response**: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- **PCAdv_Dmgr_ORACLE.response**: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- **PSAdv_Custom_DB2_DATASERVER.response**: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- **PCAdv_Custom_ORACLE.response**: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
3. Shut down any servers associated with a profile you plan to augment.
4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:

   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:

   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
   - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
     - In the **Path** field, enter the directory path to the existing certificate.
     - In the **Password** field, enter the password for the certificate

- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.

- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    profile_root/bin/startManager.sh
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.

- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

   profile_root/bin

2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

   `./addNode.sh` *deployment_manager_host deployment_manager_SOAP_port*

   Run the following command from the command line if security is enabled:

   `./addNode.sh` *deployment_manager_host deployment_manager_SOAP_port* `-username`
   userID_for_authentication `-password` *password_for_authentication*

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

   `ADMU0003I: Node DMNDID2Node03 has been successfully federated.`

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

➦ Add managed nodes (WebSphere Application Server)

Configuring a network deployment environment with an SQL Server database server:

You can configure a network deployment environment for IBM Business Process Manager using a Microsoft SQL Server database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles with an SQL Server database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all

internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

   - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

   When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

   When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

   - `key.p12`: Contains the default personal certificate.

   - `trust.p12`: Contains the signer certificate from the default root certificate.

   - `root-key.p12`: Contains the root signing certificate.

   - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.

   - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.

   - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

   These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:
- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root/properties/portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with an SQL Server database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     – Select **Production** if the server is to be used in a production capacity.
     – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.
   If you selected **Typical** profile creation, skip to the Profile Summary step.
14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with an SQL Server database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

    - In the **Server name** field, enter a name for the server or accept the default value.

    - In the **Host name** field, enter a name for the host or accept the default value.

    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by

default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the java.security file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- key.p12: Contains the default personal certificate.
- trust.p12: Contains the signer certificate from the default root certificate.
- root-key.p12: Contains the root signing certificate.
- default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with an SQL Server database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

    • In the **Server name** field, enter a name for the server or accept the default value.

    • In the **Host name** field, enter a name for the host or accept the default value.

    • In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Process Server Configuration page, set the values for the following parameters.

- **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

  Restriction: Do not mix production and non-production servers in the same cell.
  Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

  If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
  - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
  - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
  - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
  - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
  - **Password**: Enter the password for the Process Center user.

  You can click **Test Connection** to check the connection to the Process Center.

  If you selected **Typical** profile creation, skip to the Profile Summary step.
16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

- `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
- `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the `chmod` command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

   ```
   manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   -profileName MyProfileName
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.
   The Environment Selection page opens in a separate window.
5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
6. If you selected **Typical** profile creation, skip to the Federation step.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.

- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
   1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.

2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
3. Shut down any servers associated with a profile you plan to augment.
4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

  Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

    Important:

    Select **Federate this node later** if any one of the following situations is true:
    - You plan to use this custom node as a migration target.
    - Another profile is being federated. (Node federation must be serialized.)
    - The deployment manager is not running or you are not sure if it is running.
    - The deployment manager has the SOAP connector disabled
    - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
    - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
    - The deployment manager does not have a JMX administrative port enabled.
    - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

    Processing associated with federating the node as part of custom profile creation:
    - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
    - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.

- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    profile_root/bin/startManager.sh
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

    profile_root/bin

2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

   ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port*

   Run the following command from the command line if security is enabled:

   ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port* -username
   userID_for_authentication -password *password_for_authentication*

   An output window opens. If you see a message similar to the following message, your custom profile
   was federated successfully:

   ADMU0003I: Node DMNDID2Node03 has been successfully federated.

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to
customize the empty node or to create a new server.

Related information:

   Add managed nodes (WebSphere Application Server)

Loading the database with system information in a network deployment environment:

If you are creating a network deployment environment, you must run the **bootstrapProcessServerData**
command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to
the Process Server database. If you made a mistake in entering the database information during profile
creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make
the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is
loaded into the Process Server database. This data is required for the BPM applications to run correctly

- In a network deployment (ND) environment, you must run this command after a server or cluster of
  servers is created. **For a cluster, you need to run the command only once**, specifying a single cluster
  member. Run this command after the database and its tables have been created, after the profile and
  deployment environment have been created, and before the first server is started. You do not need to
  rerun the command if you add another cluster member.

Run the bootstrap utility from the command line. The bootstrap utility is found in the deployment
manager profile directory. For example:

    `Linux`   `UNIX` *install_root*/profiles/Dmgr01/bin

    `Windows` *install_root*\profiles\Dmgr01\bin

Run the bootstrap utility using one of the following commands:

- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath***] -clusterName** *cluster_name*
- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath***] -nodeName** *node_name* **-serverName**
  server_name

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the
  dbJBBCClasspath must be surrounded by quotation marks if there are spaces in the path. The default
  location is *WAS_INSTALL_ROOT*/jdbcdrivers.

- **-clusterName** is the name of the application target cluster. You must specify either this parameter or the **-nodeName** and **-serverName** parameters.
- **-nodeName** is the name of the node. You must specify either this parameter and the **-serverName** parameter, or the **-clusterName** parameter.
- **-serverName** is the name of the server. You must specify either this parameter and the **-nodeName** parameter, or the **-clusterName** parameter.

The parameters are case-sensitive.

Important: For SQL Server only: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

You have loaded the database with system information prior to successfully starting the IBM Business Process Manager server. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*clusterName*.*timestamp*.log or bootstrapProcessServerData.*nodeName*.*serverName*.*timestamp*.log depending on the target you specified. The console displays a subset of the logged information.

Bootstrap data onto a server that is part of an ND environment but not part of a cluster:

```
bootstrapProcessServerData -nodeName node01 -serverName server1
```

Bootstrap data onto a cluster that hosts the Process Server or Process Center:

```
bootstrapProcessServerData -clusterName myAppCluster
```

Modifying an existing installation:

After you install and configure the runtime environment on your system in IBM Business Process Manager, you might want to customize your configuration. For example, you might want to customize settings, set up an additional security provider, set up user accounts, and change and encrypt passwords.

Installing and configuring IBM Business Process Manager on Solaris

Install IBM Business Process Manager on Solaris, and configure a stand-alone or network deployment environment.

Configuring a stand-alone environment on Solaris

You can use a typical installation to install the software and configure a stand-alone Process Center or Process Server profile. Or you can choose custom installation and then create profiles, giving you more control over how to configure your software.

Typical installation and configuration:

The Typical installation option is the simplest and quickest method for installing and configuring IBM Business Process Manager.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Related reference:

➡️ IBM Business Process Manager Standard system requirements

Installing and configuring IBM Business Process Manager with a DB2 database:

You can install IBM Business Process Manager using a DB2 database server. You must make sure the required databases are available before you install.

Creating DB2 databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

Installing and configuring Process Center with a DB2 database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty. The databases must be created with at least a 32K page size.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   ```
   extract_directory/launchpad.sh
   ```

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:
   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.
   - **Location**: Click **Browse** to change the installation location for Process Center.

7. Specify the required database information.

Table 93. Required database configuration fields for DB2

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of `50000` or enter the correct server port number.
Username	Enter the user name to authenticate with the database. **Restriction:** User names must not contain National Language Strings (NLS).
Password	Enter an encrypted password to authenticate with the database.
Common database name	Enter the name for the Common database.
Process Center database name	Enter the name for the Process Center database.
Performance Data Warehouse database name	Enter the name for the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.
Related information:

⮕ Installation Manager updates

Installing and configuring Process Server with a DB2 database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty. The databases must be created with at least a 32K page size.

Be prepared to specify the following information during installation:
• The user name and password for database authentication
• The database server host name and port

- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   ```
   extract_directory/launchpad.sh
   ```

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:
   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when

deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

  You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 94. Required database configuration fields for DB2

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 50000 or enter the correct server port number.
Username	Enter the user name to authenticate with the database. **Restriction:** User names must not contain National Language Strings (NLS).
Password	Enter an encrypted password to authenticate with the database.
Common database name	Enter the name for the Common database.
Process Server database name	Enter the name for the Process Server database.
Performance Data Warehouse database name	Enter the name for the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

 Installation Manager updates

Installing and configuring IBM Business Process Manager with an Oracle database server:

You can install IBM Business Process Manager using an Oracle database server. You must make sure the required databases are available before you install.

Creating Oracle databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

Installing and configuring Process Center with an Oracle database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

```
ifix.1=/bpmUpdates
fixpack.2=http://test/rep
launchpad.1=/launchpad_updates
fixpack.WAS_REP=/WAS_updates
fixpack.BPM_REP=/BPM_updates
```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:

   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.

   - **Location**: Click **Browse** to change the installation location for Process Center.

7. Specify the required database information.

Table 95. Required database configuration fields for Oracle

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1521 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database System Identifier	Enter the correct Process Center database System Identifier.
Common database	For the Common database, enter values for the following parameters: • **User name**: Enter the Common database user name. • **Password**: Enter an encrypted password to authenticate with the Common database.
Process Center database	For the Process Center database, enter values for the following parameters: • **User name**: Enter the Process Center database user name. • **Password**: Enter an encrypted password to authenticate with the Process Center database.

Table 95. Required database configuration fields for Oracle (continued)

Field	Action needed
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name`: Enter the Performance Data Warehouse database user name. • `Password`: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.

Related information:

⇨ Installation Manager updates

Installing and configuring Process Server with an Oracle database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
• The user name and password for database authentication
• The database server host name and port
• The name of the Process Center or Process Server database.
• The name of the Performance Data Warehouse database.
• The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or `manageprofiles` command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   `/home/user/bpm_updates.properties`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:

   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

   - **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 96. Required database configuration fields for Oracle

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1521 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database System Identifier	Enter the correct Process Center database System Identifier.
Common database	For the Common database, enter values for the following parameters: • **User name**: Enter the Common database user name. • **Password**: Enter a password to authenticate with the Common database.
Process Server database	For the Process Server database, enter values for the following parameters: • **User name**: Enter the Process Server database user name. • **Password**: Enter an encrypted password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name**: Enter the Performance Data Warehouse database user name. • **Password**: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

    The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

    You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

➡ Installation Manager updates

Installing and configuring IBM Business Process Manager with an SQL Server database server:

You can install IBM Business Process Manager using a Microsoft SQL Server database server. You must make sure the required databases are available before you install.

Creating SQL Server databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:
   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
      ```

      where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.
   b. To create the Common database:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
      ```

      The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

   Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

   ```
   org.springframework.beans.factory.BeanCreationException: Error creating bean with name
   'message.routingCache'
   defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
   org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
   [com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
   nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
   bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
   com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

   Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
   at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
   at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
   (SQLServerPreparedStatement.java:388)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
   ```

```
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**..

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

On Windows Vista and Windows 7:

a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

c. Right-click **Local DTC** and then select **Properties**.

d. Click the **Security** tab on the **Local DTC Properties** dialog box.

e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

f. Click **OK** again to close the Properties dialog box, and then close Component Services.

g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

b. Unzip archive to any folder.

c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the x86 folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the x64 folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Installing and configuring Process Center with an SQL Server database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   extract_directory/launchpad.sh

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:
   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.
   - **Location**: Click **Browse** to change the installation location for Process Center.

7. Specify the required database information.

Table 97. Required database configuration fields for SQL Server

Field	Action needed
Hostname	Accept the default value of localhost or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1433 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database name	Enter the Process Center database name.
Performance Data Warehouse database name	Enter the Performance Data Warehouse database name.
Common database	For the Common database, enter values for the following parameters: • **User name**: Enter the Common database user name. • **Password**: Enter an encrypted password to authenticate with the Common database.

Table 97. Required database configuration fields for SQL Server (continued)

Field	Action needed
Process Center database	For the Process Center database, enter values for the following parameters: • **User name**: Enter the Process Center database user name. • **Password**: Enter an encrypted password to authenticate with the Process Center database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name**: Enter the Performance Data Warehouse database user name. • **Password**: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center.

Note: The Process Designer is supported on the Windows platform only.

Related information:

⮕ Installation Manager updates

Installing and configuring Process Server with an SQL Server database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
• The user name and password for database authentication
• The database server host name and port
• The name of the Process Center or Process Server database.
• The name of the Performance Data Warehouse database.
• The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   /home/user/bpm_updates.properties
   ```

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   ```
   extract_directory/launchpad.sh
   ```

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:

   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     – Select **Production** if the server is to be used in a production capacity.
     – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     – Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 98. Required database configuration fields for SQL Server

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1433 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Server database name	Enter the Process Server database name.
Performance Data Warehouse database name	Enter the Performance Data Warehouse database name.
Common database	For the Common database, enter values for the following parameters: • `User name`: Enter the Common database user name. • `Password`: Enter an encrypted password to authenticate with the Common database.
Process Server database	For the Process Server database, enter values for the following parameters: • `User name`: Enter the Process Server database user name. • `Password`: Enter a password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name`: Enter the Performance Data Warehouse database user name. • `Password`: Enter a password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

Related information:

⏏ Installation Manager updates

Custom installation and configuration:

Use the Custom installation option to install IBM Business Process Manager if you need any installation or configuration options that are not provided by the Typical installation option, if you want to install silently, or if you want to install on an existing installation of WebSphere Application Server.

Related reference:

⏏ IBM Business Process Manager Standard system requirements

Installing IBM Business Process Manager Standard:

With custom installation, you can select interactive or silent installation. Select interactive installation if you want to install on an existing WebSphere Application Server.

Related reference:

⏏ IBM Business Process Manager Standard system requirements

Installing IBM Business Process Manager Standard interactively:

You can install the IBM Business Process Manager product package interactively.

Before you install IBM Business Process Manager, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

Related reference:

⏏ IBM Business Process Manager Standard system requirements

Installing interactively with a new installation of WebSphere Application Server:

Using custom installation, you can install IBM Business Process Manager with a new installation of WebSphere Application Server.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Access the media in one of the following ways, depending on whether you are installing from the product DVD or from images downloaded from Passport Advantage. You can run only one launchpad at a time.
   - If you are installing from the product DVD, insert the product disk labeled IBM Business Process Manager Standard into the disk drive. Mount the disk drive if necessary. If autorun is enabled on your workstation, the launchpad program automatically opens, and you can proceed to the next step. If autorun is not enabled on your workstation, enter the following command to start the launchpad manually:

     mount_point/launchpad.sh
   - If you are installing from images downloaded from Passport Advantage, perform the following steps:
     a. Go to the directory into which you extracted the images.
     b. Enter the following command to start the launchpad:

        extract_directory/launchpad.sh

2. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically.

   If you do not have access to the Internet and want updates to the launchpad to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates. Create the following file:

   /home/user/bpm_updates.properties

   Note: Ensure that you have read/write access to the folders specified in the bpm_updates.properties file.

   The file uses a launchpad prefix, followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=/bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=/launchpad_updates
   fixpack.WAS_REP=/WAS_updates
   fixpack.BPM_REP=/BPM_updates
   ```

3. After starting the launchpad, click **Custom installation** on the Welcome page.

4. Click **Install as administrative user** to install as an administrative user. If you are a root user, you can install as an administrative user. If you are not a root user, or if you want to install to your own user name without root privileges, clear this check box.

5. Click **Install**. When you install IBM Business Process Manager, the required WebSphere Application Server Network Deployment is automatically installed.

6. On the Install Packages page of the Installation Manager, select the **IBM Business Process Manager Standard** package.

7. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

8. On the Licenses page, read the license agreement. If you agree to the terms of the license agreement, click **I accept the terms in the license agreements** and click **Next**.

9. On the Location page, the **Create new package group** option is selected by default. Select a location for the shared resources directory and a location for the Installation Manager and click **Next**. The Install Packages wizard checks your system for operating system prerequisites. If you are at a higher major release of a supported operating system, or if the operating system itself is not on the supported list, you might encounter a warning. You can continue with the installation, but the installation or product operation might not succeed until you apply maintenance.

   If you see a warning, go to the product support web pages and obtain the latest maintenance packages to apply after installation. See the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

10. On the Features page, expand the plus symbol to select the package features that you want to install. Installation Manager automatically enforces any dependencies with other features and shows the updated download size and disk space requirements for the installation.

    a. Optional: To see the dependency relationships between features, select **Show Dependencies**.

    b. Optional: Click a feature to view its brief description under **Details**.

    c. Optional: If you are installing Process Server, you can expand the Process Server feature and change the Process Server use. Select "Production" (the default) to use the server in production, or "Non-production" to use the server only for test, staging, or development. Your selection is recorded in the product tag for inventory purposes.

       Restriction: Do not mix production and non-production servers in the same cell.

    When you are finished selecting features, click **Next**.

11. On the Summary page, review your choices before installing the IBM Business Process Manager Standard package. If you want to change the choices that you made on previous pages, click **Back** and make your changes. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.

12. When the installation process is complete, a message confirms the success of the process.

    a. Optional: Click **View Log File** to open the installation log file for the current session in a new window. You must close the Installation Log window to continue.

    b. Select **Profile Management Tool** if you want to run the Profile Management Tool when you finish or select **None** to complete the installation.

    c. Click **Finish** to close the Installation Manager.

Related information:

➡ Installation Manager updates

Installing IBM Business Process Manager silently:

You can install the IBM Business Process Manager product package in *silent* installation mode. When you install in silent mode, the user interface is not available.

Before you install IBM Business Process Manager, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

Related reference:

⬆ IBM Business Process Manager Standard system requirements

Installing silently using the command line:

You can install IBM Business Process Manager silently using the command line.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Standard installation, you must install them as part of the silent installation. The required base products are:
- Installation Manager
- WebSphere Application Server Network Deployment, including the ejbdeploy and thinclient features.

The silent installation performs the following tasks:
- Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
- Installs the required base products and IBM Business Process Manager Standard.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: Run the following command to generate encrypted passwords using IBM Installation Manager to securely connect to DB2 and the administrative console.

   extract_directory/IM/tools/imutilsc -silent -nosplash encryptString *password_to_encrypt*

2. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.

3. Run the following command:

   extract_directory/IM/tools/imcl install *list_of_product_IDs* -acceptLicense
   -installationDirectory *location* -repositories *repository* -showVerboseProgress
   -log *logName*.log

   where:
   - *list_of_product_IDs* is a list of the IDs for the products and features that you want to install. You must include the required features. The syntax is *productID,feature,feature*, with multiple products separated by spaces.

Table 99. Product IDs

Product	Product ID	Feature	Description
IBM BPM Standard	com.ibm.bpm.STD.V80	bpmStd.nonprod	Test, staging, or development use. You must specify either this feature or bpmStd.prod.
		bpmStd.prod	Production use. You must specify either this feature or bpmStd.nonprod.

Table 99. Product IDs (continued)

Product	Product ID	Feature	Description
WebSphere Application Server Network Deployment	com.ibm.websphere.ND.v80	core.feature	Required. WebSphere Application Server core content.
		ejbdeploy	Required. Pre-Enterprise JavaBeans (EJB) 3.0 modules.
		thinclient	Required. Stand-alone thin clients and resource adapters.
		embeddablecontainer	Embeddable EJB container.
		samples	Sample applications feature.
		com.ibm.sdk.6_32bit	32-bit software development kit (SDK). You must specify either this feature or com.ibm.sdk.6_64bit.
		com.ibm.sdk.6_64bit	64-bit SDK This feature can only be selected on a 64-bit system. You must specify either this feature or com.ibm.sdk.6_32bit.
Installation Manager	com.ibm.cic.agent	agent_core	Installation Manager core content.
		agent_jre	Installation Manager Java Runtime Environment (JRE).

- *location* is the path to the directory where you want to install the products.
- *repository* is the path to the repository where you have extracted the files, one of the following directories:

```
extract_directory/repos_32bit
extract_directory/repos_64bit
```

  For more than one repository, separate the repository locations with commas.
- *key=value* is a list of the keys and values you want to pass to the installation, separated by commas. Do not put spaces between the commas. Create encrypted passwords using the IBM Installation Manager.

Table 100. Keys

Key	Description
user.db2.use.existing	If you are using an existing DB2 setup, add the following line exactly: `user.db2.use.existing=true` If DB2 must be installed, specify the value *false*.
user.db2.port	Port for the DB2 database. The default value is 50000.

- *logName* is the name of the log file to record messages and results.

  Running this command installs the product with the default features. If you want to install specific features or make other changes, see the reference link for the command-line arguments for imcl.

Installation Manager installs the list of products and writes a log file to the directory that you specified.

The following example installs IBM Business Process Manager Standard and WebSphere Application Server Network Deployment on Solaris.

```
imcl install com.ibm.bpm.STD.V80,bpmStd.prod
com.ibm.websphere.ND.v80,core.feature,ejbdeploy,thinclient,embeddablecontainer,samples,com.ibm.sdk.6_32bit
-acceptLicense -installationDirectory /usr/IBM/BPM80
-repositories /usr/tmp/BPM/repository -showVerboseProgress -log silentinstall.log
```

Define a stand-alone server or deployment manager profile in the Profile Management Tool or using the **manageprofiles** command-line utility. Only profiles created with the Profile Management Tool or **manageprofiles** can be used in production.

Related reference:

➡ Command-line arguments for imcl

➡ IBM Business Process Manager Standard system requirements

Related information:

➡ IBM WebSphere Application Server Information Center

Installing silently using a response file:

You can install IBM Business Process Manager Standard silently by creating a response file and then running a command to use that response file to install the product.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Standard installation, you must install them as part of the silent installation. The required base products are:
- Installation Manager
- WebSphere Application Server Network Deployment, including the ejbdeploy and thinclient features.

The silent installation performs the following tasks:
- Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
- Installs the required base products and IBM Business Process Manager Standard.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: Run the following command to generate encrypted passwords using IBM Installation Manager to securely connect to DB2 and the administrative console.

    extract_directory/IM/tools/imutilsc -silent -nosplash encryptString *password_to_encrypt*

2. Create the response file that will install the required base products and IBM Business Process Manager Standard. Copy the sample response file from the following directory to create your own response file:

    extract_directory/responsefiles/BPM/template_response.xml

3. Modify the parameters as directed in the text of the response file template to create your response file.

    Make the following changes:
    - Set your repository location. If you are not running directly from the *extract_directory*/responsefiles/BPM/ directory, point to the location of your installation repository. The repository can be local or remote. If you are running from the DVD, copy the response file from the DVD and point it back at the repository on the DVD.
    - Set the replacement variables in the response file as follows:

- ${INSTALL_LOCATION_IM} - The location where IBM Installation Manager is already installed or will be installed.
- ${LOCATION_ECLIPSE_CACHE} - The location of the Eclipse cache. This location must be set only if the location has not already been defined. Comment out this line if the location has already been set.
- ${INSTALL_LOCATION} - The location where you want to install the product.
- ${FEATURE_LIST} - The list of features for the product. This list must be replaced with the list of features that you want installed. Follow the instructions included in the `template_response.xml` file.

Tip: You must specify either the production or the non-production feature, but not both.

4. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.

5. Run the following command:

Root user:

```
extract_directory/IM/installc -acceptLicense input
extract_directory/responsefiles/BPM/template_response.xml
-log preferred_log_location/silent_install.log
```

Nonroot user:

```
extract_directory/IM/userinstc -acceptLicense input
extract_directory/responsefiles/BPM/template_response.xml
-log preferred_log_location/silent_install.log
```

Installation Manager installs any required prerequisites and IBM Business Process Manager Standard, and writes a log file to the directory you specified.

Define a stand-alone server or deployment manager profile in the Profile Management Tool or using the **manageprofiles** command-line utility. Only profiles created with the Profile Management Tool or **manageprofiles** can be used in production.

Related tasks:

⮕ Installing silently by using Installation Manager

⮕ Recording a response file with Installation Manager

Related reference:

⮕ IBM Business Process Manager Standard system requirements

Granting write permission of files and directories to nonroot users for profile creation or augmentation:

If you are not the user who installed the product, you must have write permission to selected directories within the IBM Business Process Manager installation. The product installer can grant this permission or create a group with permission to create or augment profiles.

The product installer (who can be a root or nonroot user) can grant write permission to the appropriate IBM Business Process Manager files and directories to nonroot users. The nonroot users can then create profiles. Alternatively, the product installer can create a group for users who are authorized to create profiles or give individual users the authority to create profiles.

Nonroot users create their own profiles to manage their own environments. Typically, they manage environments for development purposes.

Nonroot users must store their profiles in their private directory structure, not in the *install_root*/profiles directory of the product.

Restrictions:

- IBM Business Process Manager does not support changing ownership of existing profiles from the product installer to nonroot users. A nonroot user cannot augment profiles owned by another user.
- Mechanisms within the Profile Management Tool that suggest unique names and port values are disabled for nonroot users. The nonroot user must change the default field values in the Profile Management Tool for the profile name, node name, cell name, and port assignments. The product installer can assign nonroot users a range of values for each of the fields, and assign responsibility to the users for adhering to their assigned value ranges and for maintaining the integrity of their own definitions.

If you already created at least one profile, certain directories and files were created. You can skip the steps in this topic that create these directories and files. If no profile was previously created, you must complete the steps to create the required directories and files.

The following example task shows how to create a group that is authorized to create profiles. The terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager. The installer can perform the following steps to create the `profilers` group and give the group appropriate permissions to create a profile.

1. Log on to the IBM Business Process Manager system as the product installer. The product installer can be a root or nonroot user.
2. Using operating system commands, perform the following steps:
   a. Create a group named **profilers**, which will contain all users who can create profiles.
   b. Create a user named **user1**, who can create profiles.
   c. Add users **product_installer** and **user1** to the **profilers** group.
3. Log off and log back on as the installer to pick up the new group.
4. If no profile exists, create the following directories as the installer:
   - Create the *install_root*/**logs/manageprofiles** directory:

     ```
     mkdir install_root/logs/manageprofiles
     ```

   - Create the *install_root*/**properties/fsdb** directory:

     ```
     mkdir install_root/properties/fsdb
     ```

5. If no profile exists, create the `profileRegistry.xml` file as the installer. For this example, the file path is:

   ```
    install_root/properties/profileRegistry.xml
   ```

   Add the following information to the `profileRegistry.xml` file. The file must be encoded as UTF-8.

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <profiles/>
   ```

6. As the product installer, use operating system tools to change directory and file permissions. The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **/opt/IBM/WebSphere/AppServer**.

```
export WASHOME=/opt/IBM/WebSphere/AppServer
echo $WASHOME
echo "Performing chggrp/chmod per WAS directions..."
chgrp profilers $WASHOME/logs/manageprofiles
chmod g+wr  $WASHOME/logs/manageprofiles
chgrp profilers $WASHOME/properties
chmod g+wr  $WASHOME/properties
chgrp profilers $WASHOME/properties/fsdb
chmod g+wr  $WASHOME/properties/fsdb
chgrp profilers $WASHOME/properties/profileRegistry.xml
chmod g+wr  $WASHOME/properties/profileRegistry.xml
chgrp -R profilers $WASHOME/profileTemplates
```

Issue the following additional commands:

```
chgrp profilers $WASHOME/properties/Profiles.menu
chmod  g+wr $WASHOME/properties/Profiles.menu
```

> You might have to change the permissions on additional files if the nonroot user encounters permission errors. For example, if the product installer authorizes a nonroot user to delete a profile, then the product installer might have to delete the following file:

> *install_root*/properties/profileRegistry.xml_LOCK

> Give write access to the nonroot user for the file to authorize the user to delete the file. If the nonroot user still cannot delete the profile, then the product installer can delete the profile.

The installer created the **profilers** group and gave the group the correct permissions to the directories and files required for a nonroot user to create profiles.

The nonroot user that belongs to the **profilers** group can create profiles in a directory that the nonroot user owns and to which the nonroot user has write permission. However, the nonroot user cannot create profiles in the installation root directory of the product.

The root user and the nonroot user can use the same tasks to manage profiles.

Configuring profiles and databases:

After you install the product, if you did not use typical installation, you must create or augment one or more profiles to define the runtime environment. Before starting a profile, you must have configured the databases that are to be used with the profile.

Configuring a stand-alone environment with a DB2 database server on Solaris:

You can configure a stand-alone environment for IBM Business Process Manager using a DB2 database server.

Creating DB2 databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

If you plan to use DB2 Universal Database, as part of preparing your database server:
- You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands during profile creation. Add the **db2profile** script to the /etc/profile file. Run

```
vi /etc/profile
```

and add the following lines:

```
export PATH=/opt/IBM/db2/V9.7/bin:$PATH
. /home/db2inst1/sqllib/db2profile
```

After adding the db2profile script to the /etc/profile directory, you must run the **db2profile** script to set the DB2 environment.

- You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using db2inst1 as the user ID, add the root user to the /etc/group administrative groups. Run

```
vi /etc/group
```

and update the following lines:

```
dasadm:|;101:dasusr1,db2inst1,root
db2iadm:|:102;root
db2fadm:|:103;db2fenc1,root
```

If the procedure is not followed, you might see the following exceptions when creating or augmenting a profile.

- When the **db2profile** script is not run:

```
/opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
```

- When the DB2 database manager is not running:

```
SQL1032N No start database manager command was issued. SQLSTATE=57019
```

- When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:

```
SQL1092N "ROOT" does not have the authority to perform the requested command.
```

Creating database design files for DB2:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for stand-alone profiles with DB2:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.

- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

```
[info] Please pick one of the following [database pattern(s)] :

(1)bpm.advanced.nd.topology
(2)bpm.advanced.standalone
(3)bpm.standard.nd
(4)bpm.standard.standalone
(5)wesb.nd.topology
(6)wesb.standalone
```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database User name[default=] :
Schema name[default=] :
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]        WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.standalone**, after you configure the master component, all database components are listed as complete.

    ```
    [info] Please pick one of the following [database component(s)] :

    (1)[BPM_ProcessServer]  BPM_ProcessServer : [master] [status = complete]
    (2)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
    (3)[SibMe]       BPM_PerformanceDW_ME :  [status = complete]
    (4)[SibMe]       BPM_ProcessServer_ME :  [status = complete]
    (5)[save and exit]

    Please enter the number for the database component :5

    [status] bpm.standard.standalone is complete with 0 remaining item(s):
    ```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
        generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with DB2 in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
    - The location of the database tables.
    - The location of the JDBC driver on the system where the server profile will be created.
    - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

    /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

```
[info] Please pick one of the following [component(s)] :

(1)bpc
(2)bpcreporting
(3)bpm_performancedw
(4)bpm_processserver
(5)bspace
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=BPMDB] :
   Database User name[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   Regular pagesize[default=32k] :
   Regular TableSpace[default=TWPSSPACE] :
   Temporary pagesize[default=32k] :
   Temporary TableSpace[default=TWPSTEMPSPACE] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the data source properties section.
   Database server host[default=] :
   Database server port[default=50000] :
   Data source user name[default=] :
   Data source password[default=] :
   DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   ```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

   ```
   Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
   ```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

   ```
   generate database scripts? (y/n) [default=y] :
   ```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-ProcessServer for BPM_ProcessServer

    [info] thanks, quitting now ...
    ```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-distributed-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with a DB2 database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your DB2 database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

If you plan to configure the databases on a remote server, you must have created the databases before beginning to create or augment the profile. You can create databases on the local server or use existing databases on a remote server.

If you plan to use DB2 Universal Database, as part of preparing your database server:

- You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands during profile creation. Add the **db2profile** script to the /etc/profile file. Run

  ```
  vi /etc/profile
  ```

  and add the following lines:

  ```
  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

  After adding the db2profile script to the /etc/profile directory, you must run the **db2profile** script to set the DB2 environment.
- You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using db2inst1 as the user ID, add the root user to the /etc/group administrative groups. Run

  ```
  vi /etc/group
  ```

  and update the following lines:

  ```
  dasadm:|;101:dasusr1,db2inst1,root
  db2iadm:|:102;root
  db2fadm:|:103;db2fenc1,root
  ```

If the procedure is not followed, you might see the following exceptions when creating or augmenting a profile.

- When the **db2profile** script is not run:

  ```
  /opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
  java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
  wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
  ```
- When the DB2 database manager is not running:

  ```
  SQL1032N No start database manager command was issued. SQLSTATE=57019
  ```
- When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:

  ```
  SQL1092N "ROOT" does not have the authority to perform the requested command.
  ```

Creating Process Center stand-alone profiles with a DB2 database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.

  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.

  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

  7. Advanced: On the Profile Name and Location page, perform the following steps:

     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

     c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

        When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

     d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

     e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

  8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

14. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

        Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

15. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **DB2**.

    b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

    c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

    d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

    e. Click **Next**.

16. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 101. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in ${WAS_INSTALL_ROOT}/db2/java.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 50000 or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the `bootstrapProcessServerData` command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with a DB2 database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the `manageprofiles` command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for

commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

 8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

 9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

   • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

     – In the **Path** field, enter the directory path to the existing certificate.

     – In the **Password** field, enter the password for the certificate

     – In the **Keystore type** field, select the keystore type for the certificate you are importing.

     – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

     – Click **Next** to display the Security Certificate (Part 2) page

   When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

   When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

   • `key.p12`: Contains the default personal certificate.

   • `trust.p12`: Contains the signer certificate from the default root certificate.

   • `root-key.p12`: Contains the root signing certificate.

- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:
    a. Select the **Create a web server definition** check box.
    b. Specify the web server characteristics on the page, and click **Next**
    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.
    d. Click **Next**.

14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.
      - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

- Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

15. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **DB2**.
    b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.
    c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.
    d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

e. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 102. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in ${WAS_INSTALL_ROOT}/db2/java.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 50000 or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.

   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/default.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with a DB2 database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
     - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
     - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
     - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
  7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all

internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **DB2**.

   b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

   c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   e. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 103. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in `${WAS_INSTALL_ROOT}/db2/java`.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the

Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

11. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with a DB2 database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     – Select **Production** if the server is to be used in a production capacity.
     – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **DB2**.
    b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.
    c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.
    d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.
    e. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 104. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in `${WAS_INSTALL_ROOT}/db2/java`.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.

Table 104. Required database configuration fields for DB2 Database (continued)

Field	Action needed
Server port	Accept the default value of 50000 or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

12. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring DB2 databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.
1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root/profile*/dbscripts/ProcessServer/DB2/ at profile creation time.
2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.

   For example, the following command will connect to the database with the default user ID:
   ```
   db2 connect to databaseName
   ```

   If you log in as **BPMUSER/DB2ADMIN** to the operating system and the datasource for the Process Server database is configured to use **DBUSER** to authenticate, use:
   ```
   db2 connect to databaseName USER DBUSER USING password
   ```
3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.
4. Create the table procedures for Process Server.

   From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

   Important: Use **GO** as a delimiting character when executing the stored procedure.
   For example:
   ```
   db2 -tdGO -vf createProcedure_ProcessServer.sql
   ```
5. Reset the connection. For example:
   ```
   db2 connect reset
   ```

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:

- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/PerformanceDW/DB2/ at profile creation time.
2. Connect to your database. For example, run **db2 connect to** *databaseName*.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **db2admin**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **db2admin** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.
3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:

- Created or augmented a stand-alone profile.

1. Go to the directory containing the **configBusinessSpaceDB.sh** script. The default directory is *install_root*/*profile*/dbscripts/BusinessSpace/*node_name_server_name*/DB2/CMNDB.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.sh

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.

If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

- **bootstrapProcessServerData.sh [-dbJDBCClasspath *classpath*]**

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:

bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:

bootstrapProcessServerData -dbJDBCClasspath /DB2/java

Configuring a stand-alone environment with a DB2 for z/OS database server on Solaris:

You can configure a stand-alone environment for IBM Business Process Manager using a DB2 Universal Database for z/OS database server.

Creating database design files and database scripts (Solaris stand-alone):

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for stand-alone profiles with DB2 for z/OS:

Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.

- The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:
- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in

a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.

   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   ```

```
 (9)[SibME]     WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press
   Enter. The database component listed as the master component displays **[master]** beside the name
   and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master]**
   [status = not complete], and press Enter. You see information similar to the following example:

```
[status] WBI_CommonDB is not complete with 1 remaining item(s):
[ 1 ] WBI_CommonDB.WBI_CommonDB :   : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can
   generate, and which you can use to create your database objects. If you choose to generate SQL
   scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified
   directory path where you want to collate all the SQL scripts for a specific database; for example,
   `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet
   created the directory in your file system, the database design tool automatically creates it when the
   SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite
   its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file
   is generated.

   You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database
   properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see
   a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Data source user name[default=] :
Database schema name (SQLID)[default=] :
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool for indexes[default=BP2] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value
   and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the
   administrative console.

   After you complete the last prompt for the database properties, you see information similar to the
   following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
   (2)DB2 Universal JDBC Driver Provider on local z/OS
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the data source properties section.
   Database Location on z/OS system[default=] :
   Database server host[default=] :
   Database server port[default=] :
   Data source user name[default=] :
   Data source password[default=] :
   DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
   through jdbcDriver Type 4)[default=] :
   ```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   -----------------------------------------------------------------------------------

   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
   (2)[BPC]        WBI_BPC :  [status = complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = complete]
   (6)[SibME]      WBI_BPC_ME :  [status = complete]
   (7)[SibME]      WBI_CEI_ME :  [status = complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
   ```

```
(9)[SibME]     WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. For any database components that are listed as a parent to another component, configure the parent before the other components because the information provided will be used as default settings for the database component listing the parent. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

   Note: For DB2 for z/OS, you must configure each of the remaining components. The following guidelines apply:

   - Ensure that you specify the appropriate schema name for each of the remaining database components. Typically, the Process Server, Performance Data Warehouse, and messaging engine components require unique schema names; the remaining components can be assigned the same schema name. You might also be prompted for other values that are unique to the type of component being configured; for example, a prefix for table space names or a value for VSAM catalog names (VCAT).

   - If you intend to use a single database for all the system integration bus messaging engines, specify unique prefixes for their table space names because these prefixes will be used to keep the table space name of each messaging engine unique within the database.

   - As you configure each component, verify that the values inherited from the master component are appropriate, and amend as required. For example, if you are planning to use more than one database, you might want to amend the database name to reflect the planned distribution of database objects across the DB2 for z/OS subsystem.

   - When configuring the Process Server component (**BPM_ProcessServer**), you are asked to specify whether the database is for a Process Center or Process Server:

     ```
     [info] Please pick one of the following [Is this database for a Process Center?(s)] :

     (1)false
     (2)true
     ```

     If you want to create a Process Center profile or cluster in a network deployment environment, you must choose the **true** option. If you set the option to **false**, you will not be able to access the Process Center console.

     If the database is for a Process Server, you must choose the **false** option.

   If you selected **bpm.advanced.standalone**, after you configure the master component, you must manually configure the **BPM_PerformanceDW** and **BPM_ProcessServer** components. Also edit the configuration values of the remaining components to ensure that the configuration is appropriate for each of the databases you want to create.

   ```
   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = complete]
   (2)[BPC]        WBI_BPC :  [status = complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = complete]
   (6)[SibME]       WBI_BPC_ME :  [status = complete]
   (7)[SibME]       WBI_CEI_ME :  [status = complete]
   (8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
   (9)[SibME]       WBI_SCA_SYS_ME :  [status = complete]
   ```

```
    (10)[SibMe]     BPM_PerformanceDW_ME :  [status = complete]
    (11)[SibMe]     BPM_ProcessServer_ME :  [status = complete]
    (12)[save and exit]

    Please enter the number for the database component :12

    [status] bpm.advanced.standalone.topology is not complete with 6 remaining item(s):
    [ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
    'schemaName' for SCHEMA is empty.
    [ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
    'catalog' for VCAT is empty.
    [ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
    'adminUserName' for SECURITY_ADMIN_USER is empty.
    [ 4 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
    'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.
    [ 5 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
    'schemaName' for SCHEMA is empty.
    [ 6 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
    'catalog' for VCAT is empty.
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. To generate the database scripts for each component in the directory that you specified earlier, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories. Each of the directories also contains a **createDB2.sh** script, which you can later run together with the database scripts to create the database objects.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files and database scripts for a specific component with DB2 for z/OS in a stand-alone environment:

You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=BPMDB] :
Data source user name[default=] :
Database schema name (SQLID)[default=] :

[info] Please pick one of the following [Is this database for a Process Center?(s)] :

(1)false
(2)true

Please enter the number for the Is this database for a Process Center? [default=false] :
The user ID you use for administrative security[default=] :
The password for the name specified with the adminUserName parameter[default=] :
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

> **Note:** The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. To generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/ProcessServer for BPM_ProcessServer
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Related tasks:

"Creating the messaging engine data stores" on page 863
If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Generating scripts for creating database objects in DB2 for z/OS:

From an installation of IBM Business Process Manager, you can generate database scripts for creating IBM Business Process Manager database objects in a DB2 for z/OS database subsystem. You can use the database design tool to generate the scripts.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Prepare the following information, which provides input to the database scripts that you plan to generate:

- Information about how IBM Business Process Manager and its components are installed.
- Information about the database configuration that you are designing for the DB2 for z/OS subsystem. This information can be supplied by the database administrator or solution architect, and can include details about the required parameters and properties; for example:
  - Database server details
  - Data source details
  - Location of the JDBC driver on the system where the server profile will be created
  - User ID and password for authenticating to the database
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

To generate the database scripts for creating your database objects, you can run the database design tool in silent mode with the **-g** command-line parameter. In this mode, the tool requires input from a database design file that defines the configuration for your DB2 for z/OS database. The database design file must already exist before you generate the database scripts. You can generate the database design file by running the database design tool in interactive mode, or by using a configuration planning spreadsheet:

- You can run the database design tool in interactive mode to generate a database design file. Follow the prompts in the tool to define a DB2 for z/OS database configuration for your stand-alone or network deployment topology.
- The configuration planning spreadsheet is a supplementary artifact that can be downloaded from the IBM Support Portal. The spreadsheet is primarily intended for use with IBM Business Process Manager for z/OS, but can be tailored for use with IBM Business Process Manager on Linux on System z. The configuration planning spreadsheet consists of a number of worksheets that use color coding and comments to assist with data entry, and to help you establish naming conventions. The spreadsheet also includes macros that you can use to generate a database design file, among other files. Before using the spreadsheet, run the database design tool in interactive mode to become familiar with the required configuration options for each of the components.

  You can download the Microsoft Excel spreadsheet from Techdoc WP102075. The data that you require to complete the spreadsheet can span multiple roles, such as systems programmer, product administrator, and database administrator. Therefore, it is advisable to review the spreadsheet in detail and then work with the relevant personnel to establish naming conventions and to complete the entries. After completing the entries, use the **Save** button on the DataBase Design File worksheet to generate the database design file.

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. If necessary, copy the database design file, which defines your DB2 for z/OS configuration, to the workstation where IBM Business Process Manager is installed, to make the file available for use with the **DbDesignGenerator** command.
2. From the command line, change to the IBM Business Process Manager directory where the **DbDesignGenerator** command is stored:

    cd /*install_root*/util/dbUtils

    For example: cd /opt/IBM/WebSphere/AppServer/util/dbUtils
3. Run the **DbDesignGenerator** command using the following syntax:

    DbDesignGenerator.sh -g *db_design_file*

    where *db_design_file* is the fully qualified name of the database design file. For example:

    DbDesignGenerator.sh -g /tmp/DB2-zOS/W8CELL.nd.dbDesign
4. Review the information that is displayed on the screen, checking that no error messages are displayed. For each database component, the database design tool writes information messages to the screen to indicate that the scripts were generated in the directory specified in the database design file. For example, for the Common database component, you see information similar to the following example:

    [info] The script(s) have been generated in
    C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB

    After the last set of scripts is generated, you see information similar to the following example:

    [info] thanks, quitting now ...

    A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

    Tip: In the database design file, the directories for the SQL scripts are defined by the *ddl_outDir* variable in each component section. If you want to generate the SQL scripts to a set of different directories, a quick way to do this is to manually update the values of the *ddl_outDir* variables. Then save the database design file, and run the **DbDesignGenerator** command again.
1. Check the specified directory locations to see the database scripts that were generated. Each directory additionally includes a **createDB2.sh** script that you can use to run the SQL.

    To use these scripts to create the IBM Business Process Manager database objects in the DB2 for z/OS subsystem, you must first transfer the scripts to the z/OS system.
2. Use FTP to transfer all the generated database scripts to the z/OS system that contains the installation of DB2. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
3. Run the **createDB2.sh** script from the z/OS UNIX System Services command environment to create the DB2 for z/OS database objects.

    Note: The **createDB2.sh** script requires execute permissions.

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-zOS-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with a DB2 for z/OS database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Creating Process Center stand-alone profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.

   - Start the tool from the First steps console.

   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        - In the **Path** field, enter the directory path to the existing certificate.
        - In the **Password** field, enter the password for the certificate
        - In the **Keystore type** field, select the keystore type for the certificate you are importing.
        - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        - Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

   a. Select the **Create a web server definition** check box.

   b. Specify the web server characteristics on the page, and click **Next**

   c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

   d. Click **Next**.

14. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

      With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.

   d. Click **Next**. The design file location is passed to the command line to complete the database configuration.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones.

If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root/properties/portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:
    a. Select the **Create a web server definition** check box.
    b. Specify the web server characteristics on the page, and click **Next**
    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.
    d. Click **Next**.
14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

15. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.

       With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.
    d. Click **Next**. The design file location is passed to the command line to complete the database configuration.
16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - **default.procctr**: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - **default.procsvr**: for a Process Server stand-alone profile for IBM BPM Standard or Express.
2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.
3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - **PSStd_StandAlone_DB2_DATASERVER.response**: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.

- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/default.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with a DB2 for z/OS database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root/java/bin/java -Duser.language=locale install_root`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar`

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.

      With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.
   d. Click **Next**. The design file location is passed to the command line to complete the database configuration.
9. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.
10. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with a DB2 for z/OS database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
      With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.
   d. Click **Next**. The design file location is passed to the command line to complete the database configuration.

10. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

11. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.
4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.

- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating and configuring DB2 for z/OS databases after stand-alone profile creation:

After creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

DB2 for z/OS authorization prerequisites:

Before you create the IBM Business Process Manager databases, you must ensure that the required authorizations are granted for your DB2 for z/OS version. Also ensure that the appropriate storage groups and buffer pools are assigned, and configure clustering if necessary.

User authorization requirements for DB2 for z/OS

Ask your DB2 for z/OS system administrator to check the authorizations that have been granted to ensure that you have not granted more authority than necessary to any user ID. It can be tempting to grant DB2 SYSADM authority to the JCA authentication aliases in order to avoid possible problems with DB2 security during the configuration. The WebSphere administrator ID should not require more than DBADM authority to define the IBM Business Process Manager databases.

The following storage group, database, and buffer pool GRANT permissions are provided by default, for the WebSphere administrator identified as #*DB_USER*#. These permissions are available in the `createDatabase.sql` database script that is generated by the database design tool:

```
GRANT USE OF STOGROUP #STOGRP# TO #DB_USER# WITH GRANT OPTION;
GRANT DBADM ON DATABASE #DB_NAME# TO #DB_USER#;
GRANT USE OF ALL BUFFERPOOLS TO #DB_USER#;
```

The following GRANT permission might be required to permit the #*DB_USER*# user to create sequences and stored procedures with a schema qualifier of #*SCHEMA*#:

```
GRANT CREATEIN,ALTERIN,DROPIN ON SCHEMA #SCHEMA# TO #DB_USER# WITH GRANT OPTION;
```

The following permissions are also required:

```
GRANT CREATE ON COLLECTION #SCHEMA# TO #DB_USER#;
GRANT BINDADD TO #DB_USER#;
```

Authorization requirements for views on DB2 for z/OS V10

If you are planning to use DB2 for z/OS V10, additional permissions are required for views in the database:

- Before you run the SQL to define views, you might need to set the DBACRVW subsystem parameter to YES.

  This setting ensures that WebSphere administrator IDs with DBADM authority on database #*DB_NAME*# can create views for other user IDs.

- On DB2 for z/OS V10, the WebSphere administrator ID must be specifically granted access to views, because access is not implicitly granted to users with DBADM authority on the database. Individual GRANT statements or a Resource Access Control Facility (RACF) group can be used to provide access to views in DB2 for z/OS V10. Ask your DB2 for z/OS administrator to provide this access by using either of the following methods:

  – Issue an explicit GRANT statement for each view. For example, the following sample GRANT statements can be issued for user ID WSADMIN:

```
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_SERVICE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.APPLICATION_COMP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG_B TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY_LDESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.EVENT TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.MIGRATION_FRONT TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_INSTANCE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPLATE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPL_ATTR TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROPERTY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROP_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.SHARED_WORK_ITEM TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_HISTORY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_DIST_TARGET TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_LDESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_ITEM TO WSADMIN WITH GRANT OPTION;
```

- Define a RACF group that corresponds to the schema name for the views, and connect the WebSphere administrator ID to the RACF group. For example, you can define a RACF group named S1CELL, and connect user WSADMIN to it, as follows:

```
INFORMATION FOR GROUP S1CELL
 SUPERIOR GROUP=ZWPS   OWNER=ZWPS   CREATED=07.144
 INSTALLATION DATA=OWNED BY EMP SERIAL 009179, SITE ABCUK
 NO MODEL DATA SET
 TERMUACC
 NO SUBGROUPS
 USER(S)=  ACCESS=  ACCESS COUNT=  UNIVERSAL ACCESS=
   WSADMIN   CONNECT   000000    NONE
    CONNECT ATTRIBUTES=NONE
    REVOKE DATE=NONE    RESUME DATE=NONE
```

Using the configuration planning spreadsheet to define authorizations

If you have downloaded the configuration planning spreadsheet for use, you can alternatively use this spreadsheet to generate the GRANT permissions that are required for users and for DB2 for z/OS V10 views (as identified in the preceding sections in this topic). The configuration planning spreadsheet is available from Techdoc WP102075 in the IBM Support Portal.

The Database worksheet in the spreadsheet lists a set of sample SQL statements that can be used to create the databases and storage groups. Additionally, the GRANT permissions that are required to authorize the WebSphere administrator and to provide access to DB2 for z/OS V10 database tables are provided. When you specify the user and database object names on the BPMVariables worksheet of the spreadsheet, these values are propagated to the Database worksheet, and are used to complete the CREATE and GRANT statements with the appropriate values.

Ask your DB2 for z/OS system administrator to use the relevant CREATE statements to create the databases and storage groups, and to use the GRANT statements to authorize the WebSphere administrator. For more information about using the artifacts generated from the spreadsheet, see the accompanying PDF document in the Techdoc.

Storage group assignments and buffer pool usage

Ask your DB2 for z/OS system administrator to check the storage group assignments and buffer pool usage. Incorrect storage group assignment and buffer pool usage might not show up as an error message in a log, but might cause problems later. It is better to resolve such problems now rather than when the system has been handed over for use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.

Clustering requirements

If you intend to configure clustering, your DB2 for z/OS system must be running in data-sharing mode.

Related tasks:

"Creating database design files and database scripts (AIX stand-alone)" on page 493
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (AIX network deployment)" on page 614
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux stand-alone)" on page 155
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux network deployment)" on page 277
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris stand-alone)" on page 826
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris network deployment)" on page 949
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Windows stand-alone)" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

"Creating database design files and database scripts (Windows network deployment)" on page 1304
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating databases in the DB2 for z/OS subsystem:

When you use the database design tool (**DbDesignGenerator**) to define your database configuration, you can generate the database scripts that are required for creating the databases for the IBM Business Process Manager components.

You can use various tools to run these database scripts:

- When you run the database design tool to generate the database scripts, the **createDB2.sh** script is also generated. You can use **createDB2.sh** to run the database scripts.
- You can use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to run the database scripts.

Choosing which tool to use

You can choose one tool over another based on experience and familiarity, or personal preference. Your organization might also have implemented standards or conventions for the tools used to create DB2 for z/OS objects, particularly in a production environment.

Considerations for choosing the createDB2.sh script

- **createDB2.sh** can create all your database objects in one simple execution of the tool, so it is a good choice if this is your first server implementation.
- **createDB2.sh** runs the database scripts that the database design tool (**DbDesignGenerator**) generates.
- **createDB2.sh** runs the SQL for each component in the correct sequence.
- **createDB2.sh** creates database objects according to a naming convention that you define.
- **createDB2.sh** organizes the layout of database objects across DB2 for z/OS databases.
- **createDB2.sh** issues GRANT permissions to database, storage group, and buffer pool objects.
- **createDB2.sh** automatically completes customization of the service integration bus Data Definition Language (DDL).
- **createDB2.sh** runs in a UNIX System Services environment.
- **createDB2.sh** produces an audit trail of the objects that it creates.

Considerations for choosing other tools

- You might prefer to use the DB2 command line processor to run the SQL statements in the UNIX Systems Services environment. You must first run the **createDB2.sh** script in a mode that bypasses execution of the SQL statements and instead consolidates them into two `.sql` files. You can then run these files by using the command line processor.
- There is no restriction on the naming or organization conventions that apply to the database objects other than the standard database subsystem restrictions.
- Some tools can be run from a z/OS environment.
- The tools can produce an audit trail of the DB2 database commands that have been issued.

Related tasks:

"Creating database design files and database scripts (Solaris stand-alone)" on page 826
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Configuring the DB2 command line processor:

Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

Ensure that a properties file, for example, `clp.properties`, exists for the DB2 command line processor. If required, you can create your own properties file by using the sample properties file that is available in the directory where the command line processor is installed. For more information, see your DB2 for z/OS documentation.

Complete the following configuration steps in the z/OS UNIX System Services environment from which the **createDB2.sh** script will be run:

1. Configure the DB2 command line processor for each user ID that will work with DB2 for z/OS from the command line. You can update the personal or shared user profiles as follows:
   - Modify the CLASSPATH environment variable to include the `clp.jar` file.
   - Use the CLPPROPERTIESFILE environment variable to define the fully qualified name of the properties file for the command line processor.
   - Define the **db2** command as an alias for the command that starts the command line processor.
   - Specify the `DB2JccConfiguration.properties` file that defines the JDBC properties to be applied to the command line processor.

   You can use the following syntax to add the required entries to the `.profile` or `/etc/profile` file:

```
export CLPHOME=clp_install_dir
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=clp_properties_file_path
alias db2="java -Ddb2.jcc.propertiesFile=
/file_path/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

For example:

```
export CLPHOME=/shared/db2910_base
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=/wasv8config/clp.properties
alias db2="java -Ddb2.jcc.propertiesFile=
/wasv8config/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

2. In the properties file for the command line processor, define alias names that can be used to connect
   to the DB2 for z/OS server. An alias name definition includes the following entities:
   - A URL that specifies the domain name or IP address of the database server, the port on which the
     server listens, the DB2 location name defined during installation, and the property for the JDBC
     connection. The URL can take the form: *server:port/database* property=*value*. The port and property
     values are optional, and the DB2 location name must be specified in uppercase characters.
   - A user ID and an associated password that can be used to connect to the DB2 server. This user ID
     should correspond to the user ID (with SYSADM authority) that the DB2 system administrator uses
     to run the **createDB2.sh** script.

   You can add the required alias name entries to the properties file by using the following syntax:

   DB2ALIASNAME=URL,user_ID,password

   For example:

   `DSNXWBD=localhost:9446/DSNXWBD,SYSADM1,SYSPWRD1`

   Tip: When you define a *DB2ALIASNAME* value in the properties file, ensure that the correct
   connection details are specified to avoid connecting to the wrong database and inadvertently
   overwriting its contents.

3. Configure the DB2 DBACRVW subsystem parameter to enable user IDs with DBADM authority on a
   database to perform the following tasks for other user IDs: create views on tables in the database,
   create aliases for tables, and create materialized query tables. You can use the installation Command
   List (CLIST) to access the DSNTIPP ISPF panel and update the DBADM CREATE AUTH field to set
   DB2 ZPARM DBACRVW=YES.

Use the **createDB2.sh** script to either run the SQL to create the database objects for a specified database,
or to consolidate the SQL statements into two .sql files that you can run later using other database tools.

Related tasks:

"Creating DB2 for z/OS database objects using the createDB2.sh script"
After creating the database scripts for the IBM Business Process Manager components, you can run the
createDB2.sh script to create one or more databases in the DB2 for z/OS subsystem and populate each
database with objects.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 859
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the
database objects for the specified database, or you can bypass execution of the SQL scripts so that you
can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL
statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2
command line processor.

Creating DB2 for z/OS database objects using the createDB2.sh script:

After creating the database scripts for the IBM Business Process Manager components, you can run the
createDB2.sh script to create one or more databases in the DB2 for z/OS subsystem and populate each
database with objects.

You can also use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to create and populate databases.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

The number of databases that you create for your IBM Business Process Manager installation can depend on your topology, and how you want to distribute your database objects across the DB2 for z/OS subsystem. Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created. For example:

- To create a single database, you can run **createDB2.sh** once from a directory that contains all the database scripts that were generated for all the IBM Business Process Manager components.
- To create multiple databases at the cell level and cluster levels, you can run **createDB2.sh** once from each directory that contains the database scripts required to create the database objects for the cell and clusters.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   cd /u/work/S4CELLDB

2. Run the **createDB2.sh** script by using the following syntax:

   createDB2.sh -DBAlias *alias_name* -DBName *database_name* -DBSto *storage_group_name* -DBCreate -DBVCat *volume_catalog* -DBUser *DB_user_ID* -RunSQL

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

-DBName
> Specifies the name of the database to be created.

-DBSto
> Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

-DBCreate
> Creates the database.

-DBVCat
> Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser
> Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

-RunSQL
> Runs the SQL statements that create the database objects.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN -RunSQL
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

3. Review the messages that are displayed in the console, checking that no error messages are displayed.

   Tip: The first time that you run **createDB2.sh** to create the database, you see a few messages because the script first attempts to drop the database, which at that stage does not yet exist. These messages can be ignored, and subsequent invocations of **createDB2.sh** for the same database will not produce such messages.

   When the script has finished running, you can also review the z_output.txt file, which provides an audit trail of the operations completed and status messages. This file is stored in the directory from which you ran the **createDB2.sh** script.

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 856
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Solaris stand-alone)" on page 826
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using the DB2 command line processor:

When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

You can also run these .sql files by using any other database tool of your choice, such as SPUFI or DSNTEP2.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:
1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   `cd /u/work/S4CELLDB`

2. Run the **createDB2.sh** script by using the following syntax:

   `createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate -DBVCat volume_catalog -DBUser DB_user_ID`

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
   Specifies the name of the database to be created.

   -DBSto
   Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
   Creates the database.

-DBVCat

Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser

Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

Tip: By omitting the **-RunSQL** parameter, you bypass the execution of the SQL statements that create the database objects, and instead consolidate the statements into two `.sql` files.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

The `z_schema.sql` and `z_schemaProc.sql` files, which hold the consolidated SQL statements, are generated in the directory from which you ran the **createDB2.sh** script. The `z_schemaProc.sql` file contains SQL statements for stored procedures, and is generated in addition to `z_schema.sql` because stored procedures require the "at" sign (@) as a statement termination character when running the command line processor.

3. Run the DB2 command line processor in batch mode to execute the SQL in the `z_schema.sql` file:

   ```
   db2 -f /createDB2.sh_path/z_schema.sql
   ```

   For example:

   ```
   db2 -f /u/work/S4CELLDB/z_schema.sql
   ```
   The command line processor reads the data in the file, and processes the commands in the file consecutively.

4. Run the DB2 command line processor again to execute the SQL in the `z_schemaProc.sql` file, and additionally use the **-td** parameter to define @ as the statement termination character:

   ```
   db2 -td@ -f /createDB2.sh_path/z_schemaProc.sql
   ```

   For example:

   ```
   db2 -td@ -f /u/work/S4CELLDB/z_schemaProc.sql
   ```

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 856
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Solaris stand-alone)" on page 826
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using SPUFI or DSNTEP2:

You can use tools such as SPUFI or DSNTEP2 to run the database scripts that are used to create the DB2 for z/OS database objects for your configuration.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.

- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.

- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, which are required to create the database, into that directory.

  Tip: The generated scripts that you use to create the database objects can either be in ASCII or EBCDIC format. Typically, the generated `.sql` files are in ASCII format, and the equivalent `.ddl` files are in EBCDIC format.

- Use FTP to transfer the database scripts to the z/OS system that contains the DB2 for z/OS installation.
- Create or augment the profile.

You can create the database objects by using the tool of your choice. For example:

SPUFI A utility that runs SQL scripts from z/OS. SPUFI uses EBCDIC input.

DSNTEP2
A sample dynamic SQL program provided with the DB2 for z/OS product.

1. Assign the appropriate read permissions to the SQL scripts; for example:

   ```
   chmod 644 createTable_AppScheduler.sql
   ```

2. If the tool that you want to use to view, edit, and run the scripts requires the scripts to be in EBCDIC format, rather than ASCII format, use the **iconv** command to convert the files to EBCDIC. For example:

   ```
   iconv –t IBM-1047 –f ISO8859-1 createTable_AppScheduler.sql >
   createTable_AppScheduler_EBCDIC.sql
   ```

   Important: After converting from ASCII to EBCDIC, check that no SQL statements exceed 71 characters in length. Longer lines will lead to line truncation and invalid statements when copying to fixed-width MVS data sets.

   Tip: If you have converted the files from ASCII format to EBCDIC, but need to run the files in ASCII format, you can also use **iconv** to convert the files back to ASCII. For example:

   ```
   iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >
   createTable_AppScheduler.sql
   ```

3. Edit the values in the `createDatabase.sql` and `dropDatabase.sql` files according to your requirements. The following symbolic variables need to be updated:

   ```
   @STOGRP@     = DB2 Storage group name
   @DB_NAME@    = DB2 Database name
   @SCHEMA@     = DB2 SQLID (Schema Qualifier)
   @BPTABLE4K@  = Buffer Pool of 4k Size
   @BPINDEX@    = Buffer Pool Index
   @VOLUMES@    = DB2 comma separated list of volume-ids
   @VCAT@       = DB2 integrated catalog facility name
   @DB_USER@    = The user ID which will be used to create the database objects
   ```

4. To create database objects outside of the z/OS UNIX environment by using SPUFI or DSNTEP2, copy the customized database scripts from z/OS UNIX to a partitioned data set.

5. Run the customized scripts by using the tool of your choice.

   Tip: If you previously ran the **createDB2.sh** script and chose to bypass execution of the SQL scripts, you can also run the consolidated SQL files (`z_schema.sql` and `z_schemaProc.sql`), which were generated.

6. Verify that the database tables are created successfully with no errors by inspecting the output.

Related tasks:

"Creating database design files and database scripts (Solaris stand-alone)" on page 826
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 859
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating the messaging engine data stores:

If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

You must create and populate a messaging engine data source for each of the following components that you configure:
- Service Component Architecture system bus
- Service Component Architecture application bus
- Process Server
- Performance Data Warehouse
- Common Event Infrastructure

You can create all the database objects in one or more databases in the DB2 for z/OS subsystem. Take note of the following considerations:
- All messaging engines use the same table names. Therefore, the tables for each messaging engine require a unique schema qualifier.
- When you use the database design tool to define the database configuration for each messaging engine, you can specify a prefix for table space names:
  - If you intend to use a single database for all the messaging engines, specify a unique table space prefix for each messaging engine to make its table space name unique within the database.
  - If you intend to use a separate database for each messaging engine, the table space prefixes that you specify for the messaging engines can be identical or unique.

1. For each messaging engine, complete the following steps to generate the required database scripts:
   a. Run the database design tool (**DbDesignGenerator**) from the *install_root*/util/dbUtils directory.
   b. Select option **(2)Create a database design for a single component**, and then select the appropriate option for the messaging engine.
   c. Complete the remaining prompts in the tool to define the database configuration and to generate the scripts.

   Tip: As an alternative to running the database design tool multiple times to generate scripts for each of the messaging engines, you can run the tool once using option **(1)Create a database design for Standalone profile or Deployment Environment**. With this option, you can define the database configuration and generate database scripts for the following components in a single pass through the tool: Common database, Business Process Choreographer, Performance Data Warehouse, Process Server, Business Space, and the six messaging engines.
2. Run the generated DDL scripts using the tool of your choice.

The messaging engine data stores are created.

Related tasks:

"Creating database design files and database scripts for a specific component with DB2 for z/OS in a stand-alone environment" on page 833
You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

"Creating database design files and database scripts for stand-alone profiles with DB2 for z/OS" on page 826
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

Granting table privileges to the JCA authentication alias user ID:

If the schema name you are using is not the same as the JCA authentication alias user ID, you must grant a subset of DB2 for z/OS privileges to the JCA authentication alias user ID.

The database scripts for the service integration bus (SIB) contain commented GRANT commands that you can use as a basis for granting access to the SIB tables. However, the other IBM Business Process Manager components do not supply GRANT statements.

Use a schema name that is different from the JCA authentication alias to prevent the alias user ID from having the authority to drop tables. (The authority to drop tables is implicitly granted to the creator, that is, the schema.) Note that it does not make sense to grant a privilege like DBADM to the JCA authentication alias user ID because DBADM also has the ability to drop tables.

If you want IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the database scripts and editing them to construct GRANT commands from the CREATE commands. You can create GRANT commands like the one shown in the following example:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

where *userid/sqlid* is the JCA authentication alias user ID.

Note: Typically, the creator of a database object has implicit use of that object without requiring additional GRANT permissions. However, for DB2 for z/OS Version 10, additional GRANT permissions might be required for views because access to views is not implicitly granted to the creator.

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.

If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

* **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath***]**

where:

* **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:

bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:

bootstrapProcessServerData -dbJDBCClasspath *JDBC_DRIVER_PATH*

Setting the correct schema name for the messaging engines:

To ensure that the service integration bus (SIB) messaging engines can access the appropriate DB2 for z/OS tables, the correct schema name must be set for the messaging engines. You can use the administrative console to change the schema names.

Start the server.

1. Log in to the administrative console.
2. Navigate to **Service Integration** > **Buses**.
3. For each messaging engine:
   a. Select **Messaging engines**, and then click the name that is displayed.
   b. Click **Message store**.
   c. Change the value of **Schema name** to the name used when creating the DB2 for z/OS tables for this messaging engine.
   d. Click **Apply**.
   e. Save your configuration changes.
4. Verify that the messaging engines can be started:
   a. Log out of the administrative console.
   b. Stop, and then restart the server.
   c. Look in the output of the server log for successful SIB messaging engine startup messages. For example:

      BBO00222I: "BusName"
      CWSID0016I: Messaging engine *MessagingEngineName* is in state Started.

Configuring a stand-alone environment with an Oracle database server on Solaris:

You can configure a stand-alone environment for IBM Business Process Manager using an Oracle database server.

Setting up Oracle databases:

You or your database administrator (DBA) can configure the Process Server database, Performance Data Warehouse database, and Common database before, after, or during creating or augmenting a profile.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

You have the following options for creating and configuring the databases:
- You or your DBA creates the databases in advance and the Profile Management Tool configures them for you during profile creation or augmentation.
- You or your DBA creates a database design file using the database design tool, and you pass the file to the Profile Management Tool or **manageprofiles** command-line utility during profile creation or augmentation.
- You postpone the database configuration, and you or your DBA creates the required databases and database tables afterwards by running the scripts that are generated during profile creation or augmentation.

Creating database design files for Oracle:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for stand-alone profiles with Oracle:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name(SID) [default=CMNDB] :
Database User name[default=] :
Database schema [default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
Database Location(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the data source properties section.
   Database server host[default=] :
   Database server port[default=1521] :

   [info] Please pick one of the following [Oracle driver type(s)] :

   (1)oci8
   (2)thin

   Please enter the number for the Oracle driver type(s)? [default=thin] :
   Data source user name[default=] :
   Data source password[default=] :
   Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
   ] :
   ```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

-------------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]    WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]        WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

   If you selected **bpm.advanced.standalone**, you must manually configure the **BPM_PerformanceDW**, **BPM_ProcessServer**, and the corresponding **SibMe** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :3
-------------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
```

```
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :4
--------------------------------------------------------------------------------

[status] BPM_ProcessServer is not complete with 3 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'databaseUser' for DB_USER is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/Oracle-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.

- If you generated both the database design file and SQL scripts, you can specify only the database
  design file to ensure that the configured run time matches the database tables created from the SQL
  scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process
Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with Oracle in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables
required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only
from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that
  describes the general purpose of the database configuration, supplied by the database administrator or
  solution architect. Alternatively, it might be a description of required parameters and properties. This
  information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the
  database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship
  between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database
  design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values
and save them to a new database design file or to an existing file. You can optionally generate database
scripts that can be used to create the database objects for your database type. When you run the tool, the
available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or
validate an existing database design file, or to generate database scripts for the configuration defined in
an existing database design file. The **DbDesignGenerator** command has the following command-line
parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
```

```
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

     /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message `The system cannot find the specified path.` you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool

automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name(SID) [default=BPMDB] :
   Database User name[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server host[default=] :
      Database server port[default=1521] :

      [info] Please pick one of the following [Oracle driver type(s)] :
      ```

```
(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

> **Note:** The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/Oracle-ProcessServer for BPM_ProcessServer
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v Oracle-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with an Oracle database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your Oracle database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

To configure the database information while creating or augmenting the profile, you must know the service name for your Oracle instance.

1. Create a table space.

   ```
   SQL> CREATE TABLESPACE [tablespace_name] DATAFILE '[datafile_name]' SIZE 50M AUTOEXTEND ON NEXT 10M
   MAXSIZE UNLIMITED LOGGING;
   ```

2. Create the users. You will specify these users on the Database Configuration - Part 2 page in the Profile Management Tool. The following example assumes you create a BPMDBA user name for the Process Server database, a PDWDBA user name for the Performance Data Warehouse database, and a CMNDBA user name for the Common database:

   ```
   SQL> CREATE USER BPMDBA IDENTIFIED BY [password] DEFAULT TABLESPACE [tablespace_name];
   SQL> CREATE USER PDWDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
   [tablespace_name];
   SQL> CREATE USER CMNDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
   [tablespace_name];
   ```

3. Grant privileges to the users that you specified in the previous step. For example:

   ```
   SQL> GRANT ALL PRIVILEGES TO BPMDBA;
   SQL> GRANT ALL PRIVILEGES TO PDWDBA;
   SQL> GRANT ALL PRIVILEGES TO CMNDBA;
   ```

4. Grant execute privileges on DBMS_LOCK. For example:

   ```
   SQL> GRANT execute on DBMS_LOCK to BPMDBA;
   SQL> GRANT execute on DBMS_LOCK to PDWDBA;
   SQL> GRANT execute on DBMS_LOCK to CMNDBA;
   ```

Creating Process Center stand-alone profiles with an Oracle database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
  7. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default.

The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the java.security file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- key.p12: Contains the default personal certificate.
- trust.p12: Contains the signer certificate from the default root certificate.
- root-key.p12: Contains the root signing certificate.
- default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

a. Select the **Create a web server definition** check box.

b. Specify the web server characteristics on the page, and click **Next**

c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

d. Click **Next**.

14. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

15. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Oracle**.

    b. Optional: If you want to change the default values, enter new names for the required databases.

       • The database names can be the same.

       • You must input the database service name for each database.

       • The database must already exist.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

    d. Click **Next**.

16. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

    Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 105. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 105. Required database configuration fields for Oracle (continued)

Field	Action needed

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with an Oracle database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
  7. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root`/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:
    a. Select the **Create a web server definition** check box.
    b. Specify the web server characteristics on the page, and click **Next**
    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.
    d. Click **Next**.

14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:

- Select **Production** if the server is to be used in a production capacity.
- Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
- Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.

Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

15. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **Oracle**.
    b. Optional: If you want to change the default values, enter new names for the required databases.
       - The database names can be the same.
       - You must input the database service name for each database.
       - The database must already exist.
    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the

database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

    d. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

    Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 106. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.

- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/default.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with an Oracle database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.
8. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Oracle**.

    b. Optional: If you want to change the default values, enter new names for the required databases.

       • The database names can be the same.

       • You must input the database service name for each database.

       • The database must already exist.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

    d. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 107. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 107. Required database configuration fields for Oracle (continued)

Field	Action needed

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

11. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with an Oracle database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

   If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.
9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **Oracle**.

   b. Optional: If you want to change the default values, enter new names for the required databases.

- The database names can be the same.
- You must input the database service name for each database.
- The database must already exist.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

   d. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 108. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	       Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	       Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	       Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 108. Required database configuration fields for Oracle (continued)

Field	Action needed

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	    Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	    Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	    Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

12. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_StandAlone.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring Oracle databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root/profile*/dbscripts/ProcessServer/Oracle/ at profile creation time.

2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.

3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). In this example, **Oracle1** is the password to connect to the Oracle instance and service:

```
wbi/ProcessServer/BPMDBA>sqlplus BPMDBA/Oracle1@BPMDBA @createTable_ProcessServer.sql
```

   Make sure all SQL statements succeed without any errors.

4. Create the table procedures for Process Server.

From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). For example:

```
wbi/ProcessServer/BPMDBA>sqlplus BPMDBA/Oracle1@BPMDBA @createProcedure_ProcessServer.sql
```

Make sure all SQL statements succeed without any errors.

5. Reset the connection.

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:

- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root/profile*/dbscripts/PerformanceDW/Oracle/ at profile creation time.

2. Connect to your database.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **oracleDBUser**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **oracleDBUser** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.

3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). In this example, **Oracle1** is the password to connect to the Oracle instance and service:

   ```
   wbi/PerformanceDW/BPMDBA>sqlplus PDWDBA/Oracle1@BPMDBA @createTable_PerformanceDW.sql
   ```

   Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:

- Created or augmented a stand-alone profile.

1. Go to the directory containing the **configBusinessSpaceDB.sh** script. The default directory is *install_root/profile*/dbscripts/BusinessSpace/*node_name_server_name*/Oracle/CMNDB.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.sh

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

* **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath***]**

where:

* **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:
bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:
bootstrapProcessServerData -dbJDBCClasspath *JDBC_DRIVER_PATH*

Configuring a stand-alone environment with an SQL Server database server on Solaris:

You can configure a stand-alone environment for IBM Business Process Manager using a Microsoft SQL Server database server.

Creating SQL Server databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:

   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

   ```
   osql -b -S hostname -U db_user_account -P db_user_password
   -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
   ```

   where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.

   b. To create the Common database:

   ```
   osql -b -S hostname -U db_user_account -P db_user_password
   -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
   ```

   The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

   Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

   ```
   org.springframework.beans.factory.BeanCreationException: Error creating bean with name
   'message.routingCache'
   defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
   org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
   [com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
   nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
   bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
   com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

   Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
   at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
   at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
   (SQLServerPreparedStatement.java:388)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
   (SQLServerPreparedStatement.java:338)
   at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
   at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
   at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
   at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
   (SQLServerPreparedStatement.java:281)
   at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
   at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
   at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
   [...]
   ```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

Creating database design files for SQL Server:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for stand-alone profiles with SQL Server:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

*   Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
    *   The location of the database tables.
    *   The location of the JDBC driver on the system where the server profile will be created.
    *   The user ID and password for authenticating to the database.
*   Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
*   An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
*   Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message `The system cannot find the specified path.` you might have entered the path name incorrectly. Re-enter the path.

   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
(2)[BPC]        WBI_BPC :  [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = not complete]
(6)[SibME]      WBI_BPC_ME :  [status = not complete]
(7)[SibME]      WBI_CEI_ME :  [status = not complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

```
[status] WBI_CommonDB is not complete with 1 remaining item(s):
[ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database configuration for the component, type y and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database server host[default=] :
Database User name[default=] :
Database schema[default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server port[default=1433] :

[info] Please pick one of the following {Do you want to use windows authentication for the
databases ? (s)] :

(1) false
(2) true

Data source user name[default=] :
Data source password[default=] :
MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]        WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]       WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

   If you selected **bpm.standard.standalone**, after you configure the **BPM_ProcessServer**, you must manually configure the **BPM_PerformanceDW** component for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(5)[save and exit]

Please enter the number for the database component :2
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.standalone is complete with 0 remaining item(s):

Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/SQLServer-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with SQL Server in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.

- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=BPMDB] :
   Database server host[default=] :
   Database User name[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server port[default=1433] :

[info] Please pick one of the following {Do you want to use windows authentication for the
databases ? (s)] :

(1) false
(2) true

Data source user name[default=] :
Data source password[default=] :
MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type **y** and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/SQLServer-ProcessServer for BPM_ProcessServer

[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v SQL Server-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**.

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

On Windows XP and Windows Server 2003:

a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

c. Click the **MSDTC** tab, and then click **Security Configuration**.

d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

On Windows Vista and Windows 7:

a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

c. Right-click **Local DTC** and then select **Properties**.

d. Click the **Security** tab on the **Local DTC Properties** dialog box.

e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

f. Click **OK** again to close the Properties dialog box, and then close Component Services.

g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

b. Unzip archive to any folder.

c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the x86 folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the x64 folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating or augmenting stand-alone profiles with an SQL Server database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your SQL Server database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

Before creating a profile, you must install Microsoft SQL Server on the server that hosts the database.

Restriction: The Process Server database (BPMDB) and the Performance Data Warehouse database (PDWDB) must NOT be case-sensitive. Other databases can be case-sensitive.

When you create your database schemas, you must have a user ID with enough authority to create your tables. After the tables are created, the applications must have enough authority to select, insert, update, and delete information in the tables.

The following table shows the database privileges that are required to access the data store.

Table 109.

Database management system	Minimum privilege required to use the data store tables	Additional privilege required to create the data store tables
Microsoft SQL Server	Configure the SQL Server for SQL Server so that authentication can be based on an SQL server login ID and password. The user ID can own the tables or be a member of a group that has sufficient authority to issue TRUNCATE TABLE statements.	The user ID requires the CREATE TABLE statement privilege.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the CMNDB database as owner dbo using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

IBM Business Process Manager packages JDBC drivers for SQL Server. For information about the JDBC drivers (including version and level information), see the Detailed hardware and software requirements for IBM Business Process Manager page.

Note: You are responsible for providing JDBC driver levels outside of what is packaged with IBM Business Process Manager.

You must configure XA transactions after the database is installed and before you start the server.

Creating Process Center stand-alone profiles with an SQL Server database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.
5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.

- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:
    a. Select the **Create a web server definition** check box.
    b. Specify the web server characteristics on the page, and click **Next**
    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.
    d. Click **Next**.

14. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

15. On the Database Configuration - Part 1 page, specify your database information.

a. From the **Select a database product** list, select **Microsoft SQL Server**.

b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

d. Click **Next**.

16. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 110. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• **User name**
	  Enter the Process Server database user name.
	• **Password**
	  Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• **User name**
	  Enter the Performance Data Warehouse database user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.

Table 110. Required database configuration fields for Microsoft SQL Server - Part 2 (continued)

Field	Action needed
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\ SQLServer`

Table 111. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with an SQL Server database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name, Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

– Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

a. Select the **Create a web server definition** check box.

b. Specify the web server characteristics on the page, and click **Next**

c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

d. Click **Next**.

14. On the Process Server Configuration page, set the values for the following parameters.

- **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

15. Advanced: Configure the databases using a design file.

a. Select **Use a database design file**.

b. Click **Browse**.

c. Specify the fully qualified path name for the design file.

d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Microsoft SQL Server**.

    b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

    d. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 112. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	  Enter the Process Server database user name.
	• `Password`
	  Enter a password to authenticate with the Process Server database.
	• `Confirm password`
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• `Confirm password`
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.

Table 112. Required database configuration fields for Microsoft SQL Server - Part 2 (continued)

Field	Action needed
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 113. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:
   ```
   chmod 644 BPM_StandAlone.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/default.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

* If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

* Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with an SQL Server database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

* Specify a database design file to be used for the database configuration.

* Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).

- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **Microsoft SQL Server**.

   b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   d. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 114. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	
Process Server database	For the Process Server database, enter values for the following parameters: • `User name` Enter the Process Server database user name. • `Password` Enter a password to authenticate with the Process Server database. • `Confirm password` Confirm the password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name` Enter the Performance Data Warehouse database user name. • `Password` Enter a password to authenticate with the Performance Data Warehouse database. • `Confirm password` Confirm the password to authenticate with the Performance Data Warehouse database.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 115. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

11. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the `bootstrapProcessServerData` command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with an SQL Server database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the `manageprofiles` command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.

   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.

   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. On the Process Server Configuration page, set the values for the following parameters.

   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

   - Environment **Type**: Select how the Process Server is used:
     – Select **Production** if the server is to be used in a production capacity.
     – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.

   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

   If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.

d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.

a. From the **Select a database product** list, select **Microsoft SQL Server**.

b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

d. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 116. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	  Enter the Process Server database user name.
	• `Password`
	  Enter a password to authenticate with the Process Server database.
	• `Confirm password`
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• `Confirm password`
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Table 116. Required database configuration fields for Microsoft SQL Server - Part 2 (continued)

Field	Action needed
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\ SQLServer`

Table 117. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.

- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

12. On the Profile Summary page, review the information. Click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the `bootstrapProcessServerData` command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*`/properties/profileRegistry.xml` file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*`/profileTemplates/BPM` directory for BPM templates. The following templates are available:

   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the `manageprofiles` command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*`/profileTemplates/BPM` directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*`/BPM/samples/manageprofiles` directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.

- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_StandAlone.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring SQL Server databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/ProcessServer/SQLServer/ at profile creation time.
2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.
3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.
4. Create the table procedures for Process Server.

   From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

   Important: Use **GO** as a delimiting character when executing the stored procedure.
5. Reset the connection.

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root*/*profile*/dbscripts/PerformanceDW/SQLServer/ at profile creation time.
2. Connect to your database.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **sqladmin**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **sqladmin** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.
3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
1. Go to the directory containing the **configBusinessSpaceDB.sh** script. The default directory is *install_root*/profile/dbscripts/BusinessSpace/*node_name_server_name*/SQLServer/CMNDB.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.sh

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   install_root/profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:

- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath***]**

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Important: If the bootstrap utility fails, check that when you created the Process Server and Performance Data Warehouse databases, the **COLLATE** attribute indicated case insensitive (**CI**), not case sensitive (**CS**). That is, the create command should look like this:

```
CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS
```

Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

Bootstrap data onto the default stand-alone profile server:

```
bootstrapProcessServerData
```

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:

```
bootstrapProcessServerData -dbJDBCClasspath JDBC_DRIVER_PATH
```

Configuring a network deployment environment on Solaris

For a network deployment configuration, you install the software and then create or augment a deployment manager, create or augment at least one custom profile, and configure the network deployment environment.

Granting write permission of files and directories to nonroot users for profile creation or augmentation:

If you are not the user who installed the product, you must have write permission to selected directories within the IBM Business Process Manager installation. The product installer can grant this permission or create a group with permission to create or augment profiles.

The product installer (who can be a root or nonroot user) can grant write permission to the appropriate IBM Business Process Manager files and directories to nonroot users. The nonroot users can then create profiles. Alternatively, the product installer can create a group for users who are authorized to create profiles or give individual users the authority to create profiles.

Nonroot users create their own profiles to manage their own environments. Typically, they manage environments for development purposes.

Nonroot users must store their profiles in their private directory structure, not in the *install_root*/profiles directory of the product.

Restrictions:
- IBM Business Process Manager does not support changing ownership of existing profiles from the product installer to nonroot users. A nonroot user cannot augment profiles owned by another user.
- Mechanisms within the Profile Management Tool that suggest unique names and port values are disabled for nonroot users. The nonroot user must change the default field values in the Profile Management Tool for the profile name, node name, cell name, and port assignments. The product installer can assign nonroot users a range of values for each of the fields, and assign responsibility to the users for adhering to their assigned value ranges and for maintaining the integrity of their own definitions.

If you already created at least one profile, certain directories and files were created. You can skip the steps in this topic that create these directories and files. If no profile was previously created, you must complete the steps to create the required directories and files.

The following example task shows how to create a group that is authorized to create profiles. The terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager. The installer can perform the following steps to create the profilers group and give the group appropriate permissions to create a profile.

1. Log on to the IBM Business Process Manager system as the product installer. The product installer can be a root or nonroot user.
2. Using operating system commands, perform the following steps:
   a. Create a group named **profilers**, which will contain all users who can create profiles.
   b. Create a user named **user1**, who can create profiles.
   c. Add users **product_installer** and **user1** to the **profilers** group.
3. Log off and log back on as the installer to pick up the new group.
4. If no profile exists, create the following directories as the installer:
   - Create the *install_root*/**logs/manageprofiles** directory:

     ```
     mkdir install_root/logs/manageprofiles
     ```
   - Create the *install_root*/**properties/fsdb** directory:

     ```
     mkdir install_root/properties/fsdb
     ```
5. If no profile exists, create the profileRegistry.xml file as the installer. For this example, the file path is:

   ```
   install_root/properties/profileRegistry.xml
   ```

   Add the following information to the profileRegistry.xml file. The file must be encoded as UTF-8.

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <profiles/>
   ```
6. As the product installer, use operating system tools to change directory and file permissions. The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **/opt/IBM/WebSphere/AppServer**.

```
export WASHOME=/opt/IBM/WebSphere/AppServer
echo $WASHOME
echo "Performing chggrp/chmod per WAS directions..."
chgrp profilers $WASHOME/logs/manageprofiles
chmod g+wr  $WASHOME/logs/manageprofiles
chgrp profilers $WASHOME/properties
chmod g+wr  $WASHOME/properties
chgrp profilers $WASHOME/properties/fsdb
```

```
chmod g+wr  $WASHOME/properties/fsdb
chgrp profilers $WASHOME/properties/profileRegistry.xml
chmod g+wr  $WASHOME/properties/profileRegistry.xml
chgrp -R profilers $WASHOME/profileTemplates
```

Issue the following additional commands:

```
chgrp profilers $WASHOME/properties/Profiles.menu
chmod  g+wr $WASHOME/properties/Profiles.menu
```

You might have to change the permissions on additional files if the nonroot user encounters permission errors. For example, if the product installer authorizes a nonroot user to delete a profile, then the product installer might have to delete the following file:

install_root/properties/profileRegistry.xml_LOCK

Give write access to the nonroot user for the file to authorize the user to delete the file. If the nonroot user still cannot delete the profile, then the product installer can delete the profile.

The installer created the **profilers** group and gave the group the correct permissions to the directories and files required for a nonroot user to create profiles.

The nonroot user that belongs to the **profilers** group can create profiles in a directory that the nonroot user owns and to which the nonroot user has write permission. However, the nonroot user cannot create profiles in the installation root directory of the product.

The root user and the nonroot user can use the same tasks to manage profiles.

Creating databases and database design files:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. You must create the databases before network deployment.

Creating databases and database design files for DB2:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

Creating DB2 databases:

You can create the required databases before you create profiles.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

If you plan to use DB2 Universal Database, as part of preparing your database server:

- You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands during profile creation. Add the **db2profile** script to the /etc/profile file. Run

  ```
  vi /etc/profile
  ```

  and add the following lines:

  ```
  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

  After adding the db2profile script to the /etc/profile directory, you must run the **db2profile** script to set the DB2 environment.
- You must add the user ID that will be used during profile creation to the DB2 administrative groups. For example, if you log in as the root user and are creating the database using db2inst1 as the user ID, add the root user to the /etc/group administrative groups. Run

  ```
  vi /etc/group
  ```

  and update the following lines:

  ```
  dasadm:|;101:dasusr1,db2inst1,root
  db2iadm:|:102;root
  db2fadm:|:103;db2fenc1,root
  ```

If the procedure is not followed, you might see the following exceptions when creating or augmenting a profile.

- When the **db2profile** script is not run:

  ```
  /opt/HJJ/wps4013/util/dbUtils/profileHelpers/commonDBUtility.ant:841: Execute failed:
  java.io.IOException: Cannot run program "db2" (in directory "/opt/HJJ/
  wps4013/profiles/Dmgr01/dbscripts/CommonDB/DB2/WPSDB1")
  ```
- When the DB2 database manager is not running:

  ```
  SQL1032N No start database manager command was issued. SQLSTATE=57019
  ```
- When the user who installed IBM Business Process Manager and is creating the profile is not added to the DB2 administrative groups:

  ```
  SQL1092N "ROOT" does not have the authority to perform the requested command.
  ```

Creating database design files for DB2:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with DB2:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  – The location of the database tables.

- The location of the JDBC driver on the system where the server profile will be created.
- The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]      BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]      BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database User name[default=] :
Schema name[default=] :
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict.

If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.nd**, after you configure the master component, all database components are listed as complete.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer]  BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(3)[SibMe]      BPM_PerformanceDW_ME :  [status = complete]
(4)[SibMe]      BPM_ProcessServer_ME :  [status = complete]
(5)[save and exit]

Please enter the number for the database component :5

[status] bpm.standard.nd is complete with 0 remaining item(s):
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with DB2 in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.

- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database User name[default=] :
   Schema name[default=] :
   Regular pagesize[default=32k] :
   Regular TableSpace[default=WBISPACE] :
   Temporary pagesize[default=32k] :
   Temporary TableSpace[default=WBITEMPSPACE] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the data source properties section.
   Database server host[default=] :
   Database server port[default=50000] :
   Data source user name[default=] :
   Data source password[default=] :
   DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
   ```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

   ```
   Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
   ```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

   ```
   generate database scripts? (y/n) [default=y] :
   ```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/DB2-distributed-CommonDB for WBI_CommonDB

    [info] thanks, quitting now ...
    ```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-distributed-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating database design files and database scripts (Solaris network deployment):

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for deployment environments with DB2 for z/OS:

Use the database design tool to generate a design file that is used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool also generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.

- The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:
- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

    /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]      BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]      BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Data source user name[default=] :
   Database schema name (SQLID)[default=] :
   Bufferpool of 4K size for tables[default=BP1] :
   Bufferpool for indexes[default=BP2] :
   Bufferpool of 4K size for LOB data[default=BP3] :
   Bufferpool of 8K size for tables[default=BP8K1] :
   Bufferpool of 16K size for tables[default=BP16K1] :
   Bufferpool of 32K size for tables[default=BP32K1] :
   Storage group name[default=] :
   ```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

   Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

---------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]    WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]        WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. For any database components that are listed as a parent to another component, configure the parent before the other components because the information provided will be used as default settings for the database component listing the parent. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

   Note: For DB2 for z/OS, you must configure each of the remaining components. The following guidelines apply:
   - Ensure that you specify the appropriate schema name for each of the remaining database components. Typically, the Process Server, Performance Data Warehouse, and messaging engine components require unique schema names; the remaining components can be assigned the same schema name. You might also be prompted for other values that are unique to the type of component being configured; for example, a prefix for table space names or a value for VSAM catalog names (VCAT).
   - If you intend to use a single database for all the system integration bus messaging engines, specify unique prefixes for their table space names because these prefixes will be used to keep the table space name of each messaging engine unique within the database.
   - As you configure each component, verify that the values inherited from the master component are appropriate, and amend as required. For example, if you are planning to use more than one database, you might want to amend the database name to reflect the planned distribution of database objects across the DB2 for z/OS subsystem.
   - When configuring the Process Server component (**BPM_ProcessServer**), you are asked to specify whether the database is for a Process Center or Process Server:

     ```
     [info] Please pick one of the following [Is this database for a Process Center?(s)] :

     (1)false
     (2)true
     ```

     If you want to create a Process Center profile or cluster in a network deployment environment, you must choose the **true** option. If you set the option to **false**, you will not be able to access the Process Center console.

     If the database is for a Process Server, you must choose the **false** option.

   If you selected **bpm.advanced.nd.topology**, after you configure the master component, you must manually configure the **BPM_PerformanceDW** and **BPM_ProcessServer** components. Also edit the configuration values of the remaining components to ensure that the configuration is appropriate for each of the databases you want to create.

   ```
   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = complete]
   (2)[BPC]        WBI_BPC :  [status = complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = complete]
   (6)[SibME]      WBI_BPC_ME :  [status = complete]
   (7)[SibME]      WBI_CEI_ME :  [status = complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
   (10)[SibMe]      BPM_PerformanceDW_ME :  [status = complete]
   (11)[SibMe]      BPM_ProcessServer_ME :  [status = complete]
   (12)[save and exit]

   Please enter the number for the database component :12

   [status] bpm.advanced.nd.topology is not complete with 6 remaining item(s):
   [ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
   'schemaName' for SCHEMA is empty.
   [ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
   'catalog' for VCAT is empty.
   ```

```
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 4 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.
[ 5 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 6 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'catalog' for VCAT is empty.
```

11. When all database components for your database pattern have been configured and are listed as
    [status = complete] in the database design tool, type the appropriate number to select **[save and
    exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to
    which you want to save the file and then press Enter. If you have not yet created the directory in
    your file system, the database design tool will automatically create it when the file is generated.
    After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and
    then press Enter. If a file of the same name already exists in the specified directory, you can choose
    to either overwrite the file or specify a different file name. After you enter the file name at the
    prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. To generate the database scripts for each component in the directory that you specified earlier, type y
    and press Enter. A series of information messages is displayed to indicate that the scripts for all the
    components have been generated. For each component, you see information similar to the following
    example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories. Each of the directories also
  contains a **createDB2.sh** script, which you can later run together with the database scripts to create the
  database objects.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the
  DbDesignGenerator command.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process
Center, or Performance Data Warehouse Server in the administrative console.

*Creating database design files and database scripts for a specific component with DB2 for z/OS in a network
deployment environment:*

You can use the database design tool to generate a design file, and optionally database scripts, for the
database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

Tip: If you see the message `The system cannot find the specified path.` you might have entered the path name incorrectly. Re-enter the path.

When the database design tool launches successfully, you see information similar to the following example:

```
[info] running DbDesignGenerator in interactive mode...

[info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
help at any time.
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Data source user name[default=] :
Database schema name (SQLID)[default=] :
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool for indexes[default=BP2] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. To generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Related tasks:

"Creating the messaging engine data stores" on page 1052
If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Generating scripts for creating database objects in DB2 for z/OS:

From an installation of IBM Business Process Manager, you can generate database scripts for creating IBM Business Process Manager database objects in a DB2 for z/OS database subsystem. You can use the database design tool to generate the scripts.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Prepare the following information, which provides input to the database scripts that you plan to generate:

- Information about how IBM Business Process Manager and its components are installed.
- Information about the database configuration that you are designing for the DB2 for z/OS subsystem. This information can be supplied by the database administrator or solution architect, and can include details about the required parameters and properties; for example:
  - Database server details
  - Data source details
  - Location of the JDBC driver on the system where the server profile will be created
  - User ID and password for authenticating to the database
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

To generate the database scripts for creating your database objects, you can run the database design tool in silent mode with the **-g** command-line parameter. In this mode, the tool requires input from a database design file that defines the configuration for your DB2 for z/OS database. The database design file must already exist before you generate the database scripts. You can generate the database design file by running the database design tool in interactive mode, or by using a configuration planning spreadsheet:

- You can run the database design tool in interactive mode to generate a database design file. Follow the prompts in the tool to define a DB2 for z/OS database configuration for your stand-alone or network deployment topology.

- The configuration planning spreadsheet is a supplementary artifact that can be downloaded from the IBM Support Portal. The spreadsheet is primarily intended for use with IBM Business Process Manager for z/OS, but can be tailored for use with IBM Business Process Manager on Linux on System z. The configuration planning spreadsheet consists of a number of worksheets that use color coding and comments to assist with data entry, and to help you establish naming conventions. The spreadsheet also includes macros that you can use to generate a database design file, among other files. Before using the spreadsheet, run the database design tool in interactive mode to become familiar with the required configuration options for each of the components.

  You can download the Microsoft Excel spreadsheet from Techdoc WP102075. The data that you require to complete the spreadsheet can span multiple roles, such as systems programmer, product administrator, and database administrator. Therefore, it is advisable to review the spreadsheet in detail and then work with the relevant personnel to establish naming conventions and to complete the entries. After completing the entries, use the **Save** button on the DataBase Design File worksheet to generate the database design file.

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory /tmp/DB2-zOS/W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as /tmp/DB2-zOS/W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.

- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as /tmp/DB2-zOS/W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. If necessary, copy the database design file, which defines your DB2 for z/OS configuration, to the workstation where IBM Business Process Manager is installed, to make the file available for use with the **DbDesignGenerator** command.

2. From the command line, change to the IBM Business Process Manager directory where the **DbDesignGenerator** command is stored:

       cd /*install_root*/util/dbUtils

   For example: cd /opt/IBM/WebSphere/AppServer/util/dbUtils

3. Run the **DbDesignGenerator** command using the following syntax:

       DbDesignGenerator.sh **-g** *db_design_file*

where *db_design_file* is the fully qualified name of the database design file. For example:

```
DbDesignGenerator.sh -g /tmp/DB2-zOS/W8CELL.nd.dbDesign
```

4. Review the information that is displayed on the screen, checking that no error messages are displayed. For each database component, the database design tool writes information messages to the screen to indicate that the scripts were generated in the directory specified in the database design file. For example, for the Common database component, you see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

Tip: In the database design file, the directories for the SQL scripts are defined by the *ddl_outDir* variable in each component section. If you want to generate the SQL scripts to a set of different directories, a quick way to do this is to manually update the values of the *ddl_outDir* variables. Then save the database design file, and run the **DbDesignGenerator** command again.

1. Check the specified directory locations to see the database scripts that were generated. Each directory additionally includes a **createDB2.sh** script that you can use to run the SQL.

   To use these scripts to create the IBM Business Process Manager database objects in the DB2 for z/OS subsystem, you must first transfer the scripts to the z/OS system.

2. Use FTP to transfer all the generated database scripts to the z/OS system that contains the installation of DB2. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.

3. Run the **createDB2.sh** script from the z/OS UNIX System Services command environment to create the DB2 for z/OS database objects.

   Note: The **createDB2.sh** script requires execute permissions.

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-zOS-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Setting up databases for Oracle:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

1. Create a table space.

   ```
   SQL> CREATE TABLESPACE [tablespace_name] DATAFILE '[datafile_name]' SIZE 50M AUTOEXTEND ON NEXT 10M
   MAXSIZE UNLIMITED LOGGING;
   ```

2. Create the users. You will specify these users on the Database Configuration - Part 2 page in the Profile Management Tool. The following example assumes you create a BPMDBA user name for the Process Server database, a PDWDBA user name for the Performance Data Warehouse database, and a CMNDBA user name for the Common database:

   ```
   SQL> CREATE USER BPMDBA IDENTIFIED BY [password] DEFAULT TABLESPACE [tablespace_name];
   SQL> CREATE USER PDWDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
   [tablespace_name];
   SQL> CREATE USER CMNDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
   [tablespace_name];
   ```

3. Grant privileges to the users that you specified in the previous step. For example:

   ```
   SQL> GRANT ALL PRIVILEGES TO BPMDBA;
   SQL> GRANT ALL PRIVILEGES TO PDWDBA;
   SQL> GRANT ALL PRIVILEGES TO CMNDBA;
   ```

4. Grant execute privileges on DBMS_LOCK. For example:

   ```
   SQL> GRANT execute on DBMS_LOCK to BPMDBA;
   SQL> GRANT execute on DBMS_LOCK to PDWDBA;
   SQL> GRANT execute on DBMS_LOCK to CMNDBA;
   ```

Creating database design files for Oracle:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with Oracle:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   ```

```
    (2)Create a database design for a single component
    (3)Edit an existing database design
    (4)Generate database scripts from a database design
    (5)exit [q]

    Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]      BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]      BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool

automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name(SID) [default=CMNDB] :
Database User name[default=] :
Database schema [default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
Database Location(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
```

```
    (2)thin

    Please enter the number for the Oracle driver type(s)? [default=thin] :
    Data source user name[default=] :
    Data source password[default=] :
    Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
    ] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):


-------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
(6)[SibME]      WBI_BPC_ME :  [status = complete]
(7)[SibME]      WBI_CEI_ME :  [status = complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]     WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

If you selected **bpm.advanced.nd.topology**, you must manually configure the **BPM_PerformanceDW**, **BPM_ProcessServer**, and the corresponding **SibMe** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
```

```
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :3
----------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :4
----------------------------------------------------------------------------------

[status] BPM_ProcessServer is not complete with 3 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'databaseUser' for DB_USER is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/Oracle-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with Oracle in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.

   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   ```

```
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :
   ```

   ```
   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name(SID) [default=CMNDB] :
   Database User name[default=] :
   Database schema [default=] :
   System user name(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   Database Location(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/util/dbUtils/Oracle-CommonDB for WBI_CommonDB
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v Oracle-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating databases and database design files for SQL Server:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

Creating SQL Server databases:

You can create the required databases before you create profiles.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:
   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
      ```

      where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.

b. To create the Common database:

```
osql -b -S hostname -U db_user_account -P db_user_password
-Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
```

The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

When you create your database schemas, you must have a user ID with enough authority to create your tables. After the tables are created, the applications must have enough authority to select, insert, update, and delete information in the tables.

The following table shows the database privileges that are required to access the data store.

Table 118.

Database management system	Minimum privilege required to use the data store tables	Additional privilege required to create the data store tables
Microsoft SQL Server	Configure the SQL Server for SQL Server so that authentication can be based on an SQL server login ID and password. The user ID can own the tables or be a member of a group that has sufficient authority to issue TRUNCATE TABLE statements.	The user ID requires the CREATE TABLE statement privilege.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**..

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

   e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

   f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

   On Windows Vista and Windows 7:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

   c. Right-click **Local DTC** and then select **Properties**.

   d. Click the **Security** tab on the **Local DTC Properties** dialog box.

   e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

   f. Click **OK** again to close the Properties dialog box, and then close Component Services.

   g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

b. Unzip archive to any folder.

c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the `x86` folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the `x64` folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating database design files for SQL Server:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with SQL Server:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and

press Enter. You see the list of database components that you can configure for the selected
environment, with a prompt to choose a component to configure; for example:

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]       WBI_CommonDB : [master] [status = not complete]
(2)[BPC]         WBI_BPC :  [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = not complete]
(6)[SibME]       WBI_BPC_ME :  [status = not complete]
(7)[SibME]       WBI_CEI_ME :  [status = not complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
(9)[SibME]       WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]      BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]      BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press
   Enter. The database component listed as the master component displays **[master]** beside the name
   and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master]
   [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can
   generate, and which you can use to create your database objects. If you choose to generate SQL
   scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified
   directory path, or a path that is relative to the current directory from which the database design tool
   is being run. If you have not yet created the directory in your file system, the database design tool
   automatically creates it when the SQL scripts are generated. If the specified directory already exists,
   you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file
   is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database
   properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see
   a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database server host[default=] :
   Database User name[default=] :
   ```

```
Database schema[default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.
   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server port[default=1433] :

      [info] Please pick one of the following {Do you want to use windows authentication for the
      databases ? (s)] :

      (1) false
      (2) true

      Data source user name[default=] :
      Data source password[default=] :
      MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   ---------------------------------------------------------------------------------

   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.
   ```

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]          WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer : [status = not complete]
(5)[BSpace]       WBI_BSPACE :  [status = complete]
(6)[SibME]        WBI_BPC_ME :  [status = complete]
(7)[SibME]        WBI_CEI_ME :  [status = complete]
(8)[SibME]         WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.nd**, after you configure the **BPM_ProcessServer**, you must manually configure the **BPM_PerformanceDW** component for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(5)[save and exit]

Please enter the number for the database component :2
--------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

   ```
   [info] The script(s) have been generated in
   WAS_HOME/profiles/default/util/dbUtils/SQLServer-CommonDB for WBI_CommonDB
   ```

   After the last set of scripts is generated, you see information similar to the following example:

   ```
   [info] thanks, quitting now ...
   ```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with SQL Server in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  – The location of the database tables.
  – The location of the JDBC driver on the system where the server profile will be created.
  – The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*/util/dbUtils directory. For example:

   /opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

```
[info] Please pick one of the following [component(s)] :

(1)bpc
(2)bpcreporting
(3)bpm_performancedw
(4)bpm_processserver
(5)bspace
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database server host[default=] :
   Database User name[default=] :
   Database schema[default=] :
   System user name(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the data source properties section.
   Database server port[default=1433] :

   [info] Please pick one of the following {Do you want to use windows authentication for the
   databases ? (s)] :

   (1) false
   (2) true

   Data source user name[default=] :
   Data source password[default=] :
   MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
   ```

   Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=/WebSphere/V8T8DM/DeploymentManager/util/dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

   ```
   Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
   ```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

   ```
   generate database scripts? (y/n) [default=y] :
   ```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    WAS_HOME/profiles/default/util/dbUtils/SQLServer-CommonDB for WBI_CommonDB

    [info] thanks, quitting now ...
    ```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v SQL Server-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Configuring the network deployment environment using the configureNode command:

To configure a typical network deployment environment, you can use the **configureNode** command instead of using the Profile Management Tool and Deployment Environment wizard or the **manageprofiles** and **wsadmin** commands. This command provides limited customization by using a properties file, and creates a ready-to-use environment. You can also use **configureNode** later to extend the deployment environment.

Restriction: This command is not supported if your database type is DB2 for z/OS.

Important: The **configureNode** command cannot be run twice on one machine without first deleting the profile that was created. To run the **configureNode** command a second time, first delete the profile.

Creating the deployment environment using the configureNode command:

You can use the **configureNode** command to create a typical network deployment environment. The goal of this command is to provide a ready-to-use environment. The only parameters that can be customized are provided in a properties file.

Restriction: This command is not supported if your database type is DB2 for z/OS.

You must have installed the product and created all the databases that are specified in the properties file.

Important: You must have already installed the database software and created the databases (but do not create tables). You must also have created all the users that you specify in the properties file. Make sure the users have the installation privileges listed in Database privileges.

For your SQL Server database server:
- Make sure that the username and schema exist before the configuration is done. The schema value should be the default schema for the user chosen.
- If connections to the database will be made by the current Windows user that the server is running under, the SQL Server must have **Windows authentication mode** or **SQL Server and Windows Authentication mode** enabled, as specified through Microsoft SQL Server Management Studio.

Restriction: Run **configureNode** commands sequentially; do not try to run the command on multiple machines at the same time.

The **configureNode** command uses default ports to create the deployment manager. You cannot customize the ports using this command. The parameters listed in the sample files are the only parameters that can be customized. Make sure that no other profiles that are configured with default ports are started on the same machine.

The **configureNode** command creates the following network deployment topology:
- A single cell environment
- The environment contains the number of cluster members that you specify in the properties file
- The environment uses the Remote Messaging, Remote Support, and Web topology pattern, which includes the following four clusters:
  - Messaging infrastructure cluster
  - Supporting infrastructure cluster
  - Application deployment target cluster
  - Web application cluster

The command performs the following tasks:
- Creates the deployment manager node based on the values in the deployment manager properties file and starts the deployment manager.
- Creates the deployment environment definition.
- Creates a custom node based on the values in the custom node properties file.
- Federates the node and adds the node to the deployment environment.
- Generates the deployment environment.
- Creates the database tables. (You must already have created the databases. See "Before you begin" for instructions.)
- Runs the bootstrap utility to load the Process Server database with system information.
- Configures Business Space and Process Portal on the web application cluster.

The default port is used to create the deployment manager. If a deployment manager is already running on the machine when you run **configureNode**, creating the deployment environment fails. If a deployment manager has already been created but is not running, you must change the port of one of the deployment managers or you might get a port conflict error when you start the other deployment manager.

To create the deployment environment for the first time, complete the following steps:
1. On the machine where you want to create the deployment environment, locate the sample properties file: *install_root*/util/ndUtils/samples/.

2. Copy the sample files and modify the files to reflect your environment. For example, for a deployment manager for IBM BPM Standard for Process Server, choose the `sample_std_ps_dmgr.properties` file.

   For each database that you want to create, copy the database parameters section and specify the database name, user name, password, and schema name. The Process Server database, Performance Data Warehouse database, and Common database are required, and they must have different names.

   For more information about the available properties, read the comments in the sample files, or see the **configureNode** command reference and the examples.

   Restriction: The parameters listed in the sample files are the only parameters that can be customized.

3. Run the **configureNode** command, passing it the names of the two files you created. The custom node file is optional, but if you do not include it, only the deployment manager is created. For example:

   > *install_root*/**util/ndUtils/configureNode.sh -dmgr_response** *my_dmgr_response_file.properties*
   > **-response** *node01_response_file.properties*

   Note: If you receive the **Failed to perform Security setting update** error, check to ensure that the global IP address has not been appended to **127.0.0.1 localhost** in the hosts file. For example: **127.0.0.1 localhost example.ibm.com**.

You now have a deployment manager, a custom node, and a deployment environment that use the Remote Messaging, Remote Support, and Web topology pattern.

Messages are recorded in the file *install_root*/logs/config/configureNode.log.

Tip: After you have configured a network deployment environment, if you test the data store connection (for example, in the administrative console, on the page **Resources** > **JDBC** > **Data sources**), you get a message saying that the test connection operation failed with the exception `com.ibm.wsspi.runtime.variable.UndefinedVariableException: Undefined Variable WAS_INSTALL_ROOT`. This does not necessarily indicate that there will be a problem accessing the data source at run time. Ensure that the location of your JDBC driver files is accessible to every client that must use the data source, and configure the variable with the full path of that location. Disregard the test connection error unless you are also experiencing trouble connecting to the data store at run time. For additional information, see the WebSphere Application Server documentation about the test connection service.

Important: If you use additional servers with unique ports, WebSphere Application Server does not automatically configure the virtual host for the server. Specifically, WebSphere Application Server does not automatically add the host alias ports to a virtual host. However, you can use the administrative console to add a new host alias for each of the ports that are used by the new server. For more information, see the WebSphere Application Server documentation about configuring virtual hosts.

Related concepts:

➡ Virtual hosts

Related tasks:

➡ Configuring virtual hosts

Related reference:

➡ Test connection service

Extending the deployment environment using the configureNode command:

After you have created a deployment environment using the **configureNode** command, you can run the command at a later time to extend the deployment environment.

You need the following prerequisites before running the **configureNode** command:

- You must have installed the product on the machine where you want to extend the deployment environment.
- The deployment manager must be running.
- You must have created the deployment environment by running the **configureNode** command.

Restriction: Run **configureNode** commands sequentially; do not try to run the command on multiple machines at the same time.

1. On the machine where you want to extend the deployment environment, locate the sample custom node files: *install_root*/util/ndUtils/samples/
2. Copy the sample file that is most similar to the properties file that you need. For example, to extend the deployment environment for IBM BPM Standard for Process Server, choose the `sample_std_ps_node.properties` file.

   Modify the new custom node file to reflect your environment, including the details of the deployment manager.

   For more information about the available properties, read the comments in the sample files, or see the **configureNode** command reference and the examples.

   Restriction: The parameters listed in the sample files are the only parameters that can be customized.
3. Run the **configureNode** command, passing it the name of the sample file. For example:

   install_root/util/ndUtils/configureNode.sh -response *node01_response_file.properties*

   Note: If you receive the **Failed to perform Security setting update** error, check to ensure that the global IP address has not been appended to **127.0.0.1 localhost** in the hosts file. For example: **127.0.0.1 localhost example.ibm.com**.

You have extended the deployment environment.

Messages are recorded in the file *install_root*/logs/config/configureNode.log.

Tip: After you have configured a network deployment environment, if you test the data store connection (for example, in the administrative console, on the page **Resources** > **JDBC** > **Data sources**), you get a message saying that the test connection operation failed with the exception `com.ibm.wsspi.runtime.variable.UndefinedVariableException: Undefined Variable WAS_INSTALL_ROOT`. This does not necessarily indicate that there will be a problem accessing the data source at run time. Ensure that the location of your JDBC driver files is accessible to every client that must use the data source, and configure the variable with the full path of that location. Disregard the test connection error unless you are also experiencing trouble connecting to the data store at run time. For additional information, see the WebSphere Application Server documentation about the test connection service.

Important: If you use additional servers with unique ports, WebSphere Application Server does not automatically configure the virtual host for the server. Specifically, WebSphere Application Server does not automatically add the host alias ports to a virtual host. However, you can use the administrative console to add a new host alias for each of the ports that are used by the new server. For more information, see the WebSphere Application Server documentation about configuring virtual hosts.

Related concepts:

⮕ Virtual hosts

Related tasks:

⮕ Configuring virtual hosts

Related reference:

⮕ Test connection service

Configuring profiles and creating a network deployment environment:

After you install the product, you must create or augment a deployment manager and one or more custom profiles to define the runtime environment. Before starting the deployment manager, you must have configured the databases that are to be used with IBM Business Process Manager.

Creating or augmenting network deployment profiles:

If you used the **configureNode** command to create and configure your deployment environment, no further configuration is required. Otherwise, you must create or augment a deployment manager profile and one or more custom profiles before creating the deployment environment. Using profiles, you can have more than one runtime environment on a system, without having to install multiple copies of IBM Business Process Manager.

Configuring a network deployment environment with a DB2 database server:

You can configure a network deployment environment for IBM Business Process Manager using a DB2 database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.

    - `trust.p12`: Contains the signer certificate from the default root certificate.

    - `root-key.p12`: Contains the root signing certificate.

    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.

    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.

    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do

not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with a DB2 database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.
14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create a deployment manager profile.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   ```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with a DB2 database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

 1. Use one of the following methods to start the Profile Management Tool.
    - Start the tool from the First steps console.
    - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
 2. Shut down any servers associated with a profile you plan to augment.
 3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
 4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application

Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

        – In the **Path** field, enter the directory path to the existing certificate.

        – In the **Password** field, enter the password for the certificate

        – In the **Keystore type** field, select the keystore type for the certificate you are importing.

        – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

        – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.

    - `trust.p12`: Contains the signer certificate from the default root certificate.

    - `root-key.p12`: Contains the root signing certificate.

    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.

    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.

    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do

not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

```
profile_root/properties/portdef.prop
```

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with a DB2 database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

   - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

     – In the **Path** field, enter the directory path to the existing certificate.

     – In the **Password** field, enter the password for the certificate

     – In the **Keystore type** field, select the keystore type for the certificate you are importing.

     – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

     – Click **Next** to display the Security Certificate (Part 2) page

   When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

   When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

   - `key.p12`: Contains the default personal certificate.

   - `trust.p12`: Contains the signer certificate from the default root certificate.

   - `root-key.p12`: Contains the root signing certificate.

   - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.

- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
        - Select **Production** if the server is to be used in a production capacity.
        - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
        - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Profile Summary step.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
  2. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
  6. If you selected **Typical** profile creation, skip to the Federation step.
  7. Advanced: On the Profile Name and Location page, perform the following steps:

     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

     c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

     When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

     d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

     e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

–   Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

*   `key.p12`: Contains the default personal certificate.
*   `trust.p12`: Contains the signer certificate from the default root certificate.
*   `root-key.p12`: Contains the root signing certificate.
*   `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
*   `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
*   `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

*   The ports are assigned to a profile created under an installation performed by the current user.
*   The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the `-templatePath` option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the `manageprofiles` parameters topic.

3. To use the `-responseFile` parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the `chmod` command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Custom.response
   ```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
  2. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

3. Shut down any servers associated with a profile you plan to augment.
4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

    The **Typical** option augments a profile with default configuration settings.

    The **Advanced** option lets you specify your own configuration values for a profile.

    Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

    - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
    - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
    - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:

    a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

    b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

    c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

    When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

    d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

    e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.

- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

    Important:

    Select **Federate this node later** if any one of the following situations is true:
    - You plan to use this custom node as a migration target.
    - Another profile is being federated. (Node federation must be serialized.)
    - The deployment manager is not running or you are not sure if it is running.
    - The deployment manager has the SOAP connector disabled
    - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
    - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
    - The deployment manager does not have a JMX administrative port enabled.
    - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

    Processing associated with federating the node as part of custom profile creation:
    - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
    - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the java.security file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- key.p12: Contains the default personal certificate.
- trust.p12: Contains the signer certificate from the default root certificate.
- root-key.p12: Contains the root signing certificate.
- default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root/properties/portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the `install_root`/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the `install_root`/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the `install_dir`/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the `install_root`/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.

- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    profile_root/bin/startManager.sh
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

    profile_root/bin

2. Run the **addNode** command.

    Run the following command from the command line if security is not enabled:

    ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port*

Run the following command from the command line if security is enabled:

```
./addNode.sh deployment_manager_host deployment_manager_SOAP_port -username
    userID_for_authentication -password password_for_authentication
```

An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

```
ADMU0003I: Node DMNDID2Node03 has been successfully federated.
```

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

➦ Add managed nodes (WebSphere Application Server)

Configuring a network deployment environment with a DB2 for z/OS database server:

You can configure a network deployment environment for IBM Business Process Manager using a DB2 Universal Database for z/OS database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.

- Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

- In the **Path** field, enter the directory path to the existing certificate.
- In the **Password** field, enter the password for the certificate
- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with a DB2 for z/OS database server using the Profile Management Tool on Solaris:

You can configure a deployment manager profile for Process Server using the Profile Management Tool on a 32-bit architecture. For 64-bit architectures on Solaris, use the `manageprofiles` command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

- In the **Server name** field, enter a name for the server or accept the default value.

- In the **Host name** field, enter a name for the host or accept the default value.

- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default.

The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Process Server Configuration page, set the values for the following parameters.

- **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
- Environment **Type**: Select how the Process Server is used:
    - Select **Production** if the server is to be used in a production capacity.
    - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
    - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.

Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.
3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with a DB2 for z/OS database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
8. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

    d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

    e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

9. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

    • In the **Server name** field, enter a name for the server or accept the default value.

    • In the **Host name** field, enter a name for the host or accept the default value.

    • In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

10. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

11. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

        – In the **Path** field, enter the directory path to the existing certificate.

        – In the **Password** field, enter the password for the certificate

        – In the **Keystore type** field, select the keystore type for the certificate you are importing.

        – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

        – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

12. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

• `key.p12`: Contains the default personal certificate.

- trust.p12: Contains the signer certificate from the default root certificate.
- root-key.p12: Contains the root signing certificate.
- default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

13. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with a DB2 for z/OS database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
8. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

9. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

10. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

11. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

12. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain

keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

13. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

14. On the Process Server Configuration page, set the values for the following parameters.

- **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment type or if this

Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:
   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the `manageprofiles` command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

   ```
   manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   -profileName MyProfileName
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the `manageprofiles` command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
6. If you selected **Typical** profile creation, skip to the Federation step.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

    d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

    e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        – In the **Path** field, enter the directory path to the existing certificate.
        – In the **Password** field, enter the password for the certificate
        – In the **Keystore type** field, select the keystore type for the certificate you are importing.
        – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.

- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.sh –create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
  2. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.
  3. Shut down any servers associated with a profile you plan to augment.
  4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
     - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
     - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
     - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
  8. If you selected **Typical** profile creation, skip to the Federation step.
  9. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is
        `install_root/profiles/profile_name`.
     c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

        When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

    d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

    e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

  • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

  • In the **Server name** field, enter a name for the server or accept the default value.

  • In the **Host name** field, enter a name for the host or accept the default value.

  • In the **Cell name** field, enter a name for the cell or accept the default value.

  Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

  Important:

  Select **Federate this node later** if any one of the following situations is true:

  • You plan to use this custom node as a migration target.

  • Another profile is being federated. (Node federation must be serialized.)

  • The deployment manager is not running or you are not sure if it is running.

  • The deployment manager has the SOAP connector disabled

  • The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.

  • The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.

  • The deployment manager does not have a JMX administrative port enabled.

  • The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

  Processing associated with federating the node as part of custom profile creation:

  • The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).

  • If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

  Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

  • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   • managed.procctr: for a Process Center custom profile for IBM BPM Standard.

   • managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    ```
    profile_root/bin/startManager.sh
    ```
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.

- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

   profile_root/bin

2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

   ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port*

   Run the following command from the command line if security is enabled:

   ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port* -username
   userID_for_authentication -password *password_for_authentication*

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

   ADMU0003I: Node DMNDID2Node03 has been successfully federated.

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

▶ Add managed nodes (WebSphere Application Server)

Creating and configuring DB2 for z/OS databases after network deployment profile creation:

After creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

DB2 for z/OS authorization prerequisites:

Before you create the IBM Business Process Manager databases, you must ensure that the required authorizations are granted for your DB2 for z/OS version. Also ensure that the appropriate storage groups and buffer pools are assigned, and configure clustering if necessary.

User authorization requirements for DB2 for z/OS

Ask your DB2 for z/OS system administrator to check the authorizations that have been granted to ensure that you have not granted more authority than necessary to any user ID. It can be tempting to grant DB2 SYSADM authority to the JCA authentication aliases in order to avoid possible problems with DB2 security during the configuration. The WebSphere administrator ID should not require more than DBADM authority to define the IBM Business Process Manager databases.

The following storage group, database, and buffer pool GRANT permissions are provided by default, for the WebSphere administrator identified as *#DB_USER#*. These permissions are available in the `createDatabase.sql` database script that is generated by the database design tool:

GRANT USE OF STOGROUP #STOGRP# TO #DB_USER# WITH GRANT OPTION;
GRANT DBADM ON DATABASE #DB_NAME# TO #DB_USER#;
GRANT USE OF ALL BUFFERPOOLS TO #DB_USER#;

The following GRANT permission might be required to permit the #*DB_USER*# user to create sequences and stored procedures with a schema qualifier of #*SCHEMA*#:

```
GRANT CREATEIN,ALTERIN,DROPIN ON SCHEMA #SCHEMA# TO #DB_USER# WITH GRANT OPTION;
```

The following permissions are also required:

```
GRANT CREATE ON COLLECTION #SCHEMA# TO #DB_USER#;
GRANT BINDADD TO #DB_USER#;
```

Authorization requirements for views on DB2 for z/OS V10

If you are planning to use DB2 for z/OS V10, additional permissions are required for views in the database:

- Before you run the SQL to define views, you might need to set the DBACRVW subsystem parameter to YES.

  This setting ensures that WebSphere administrator IDs with DBADM authority on database #*DB_NAME*# can create views for other user IDs.

- On DB2 for z/OS V10, the WebSphere administrator ID must be specifically granted access to views, because access is not implicitly granted to users with DBADM authority on the database. Individual GRANT statements or a Resource Access Control Facility (RACF) group can be used to provide access to views in DB2 for z/OS V10. Ask your DB2 for z/OS administrator to provide this access by using either of the following methods:

  - Issue an explicit GRANT statement for each view. For example, the following sample GRANT statements can be issued for user ID WSADMIN:

```
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_SERVICE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.APPLICATION_COMP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG_B TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY_LDESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.EVENT TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.MIGRATION_FRONT TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_INSTANCE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPLATE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPL_ATTR TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROPERTY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROP_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.SHARED_WORK_ITEM TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_HISTORY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_DIST_TARGET TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_LDESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_ITEM TO WSADMIN WITH GRANT OPTION;
```

– Define a RACF group that corresponds to the schema name for the views, and connect the WebSphere administrator ID to the RACF group. For example, you can define a RACF group named S1CELL, and connect user WSADMIN to it, as follows:

```
INFORMATION FOR GROUP S1CELL
 SUPERIOR GROUP=ZWPS   OWNER=ZWPS    CREATED=07.144
 INSTALLATION DATA=OWNED BY EMP SERIAL 009179, SITE ABCUK
 NO MODEL DATA SET
 TERMUACC
 NO SUBGROUPS
 USER(S)=  ACCESS=  ACCESS COUNT=  UNIVERSAL ACCESS=
   WSADMIN   CONNECT   000000     NONE
    CONNECT ATTRIBUTES=NONE
    REVOKE DATE=NONE     RESUME DATE=NONE
```

Using the configuration planning spreadsheet to define authorizations

If you have downloaded the configuration planning spreadsheet for use, you can alternatively use this spreadsheet to generate the GRANT permissions that are required for users and for DB2 for z/OS V10 views (as identified in the preceding sections in this topic). The configuration planning spreadsheet is available from Techdoc WP102075 in the IBM Support Portal.

The Database worksheet in the spreadsheet lists a set of sample SQL statements that can be used to create the databases and storage groups. Additionally, the GRANT permissions that are required to authorize the WebSphere administrator and to provide access to DB2 for z/OS V10 database tables are provided. When you specify the user and database object names on the BPMVariables worksheet of the spreadsheet, these values are propagated to the Database worksheet, and are used to complete the CREATE and GRANT statements with the appropriate values.

Ask your DB2 for z/OS system administrator to use the relevant CREATE statements to create the databases and storage groups, and to use the GRANT statements to authorize the WebSphere administrator. For more information about using the artifacts generated from the spreadsheet, see the accompanying PDF document in the Techdoc.

Storage group assignments and buffer pool usage

Ask your DB2 for z/OS system administrator to check the storage group assignments and buffer pool usage. Incorrect storage group assignment and buffer pool usage might not show up as an error message in a log, but might cause problems later. It is better to resolve such problems now rather than when the system has been handed over for use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.

Clustering requirements

If you intend to configure clustering, your DB2 for z/OS system must be running in data-sharing mode.

Related tasks:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

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You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating databases in the DB2 for z/OS subsystem:

When you use the database design tool (**DbDesignGenerator**) to define your database configuration, you can generate the database scripts that are required for creating the databases for the IBM Business Process Manager components.

You can use various tools to run these database scripts:

- When you run the database design tool to generate the database scripts, the **createDB2.sh** script is also generated. You can use **createDB2.sh** to run the database scripts.
- You can use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to run the database scripts.

Choosing which tool to use

You can choose one tool over another based on experience and familiarity, or personal preference. Your organization might also have implemented standards or conventions for the tools used to create DB2 for z/OS objects, particularly in a production environment.

Considerations for choosing the createDB2.sh script
- **createDB2.sh** can create all your database objects in one simple execution of the tool, so it is a good choice if this is your first server implementation.
- **createDB2.sh** runs the database scripts that the database design tool (**DbDesignGenerator**) generates.
- **createDB2.sh** runs the SQL for each component in the correct sequence.
- **createDB2.sh** creates database objects according to a naming convention that you define.
- **createDB2.sh** organizes the layout of database objects across DB2 for z/OS databases.
- **createDB2.sh** issues GRANT permissions to database, storage group, and buffer pool objects.
- **createDB2.sh** automatically completes customization of the service integration bus Data Definition Language (DDL).
- **createDB2.sh** runs in a UNIX System Services environment.
- **createDB2.sh** produces an audit trail of the objects that it creates.

Considerations for choosing other tools
- You might prefer to use the DB2 command line processor to run the SQL statements in the UNIX Systems Services environment. You must first run the **createDB2.sh** script in a mode that bypasses execution of the SQL statements and instead consolidates them into two `.sql` files. You can then run these files by using the command line processor.
- There is no restriction on the naming or organization conventions that apply to the database objects other than the standard database subsystem restrictions.
- Some tools can be run from a z/OS environment.
- The tools can produce an audit trail of the DB2 database commands that have been issued.

Related tasks:

"Creating database design files and database scripts (Solaris network deployment)" on page 949
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Configuring the DB2 command line processor:

Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

Ensure that a properties file, for example, `clp.properties`, exists for the DB2 command line processor. If required, you can create your own properties file by using the sample properties file that is available in the directory where the command line processor is installed. For more information, see your DB2 for z/OS documentation.

Complete the following configuration steps in the z/OS UNIX System Services environment from which the **createDB2.sh** script will be run:
1. Configure the DB2 command line processor for each user ID that will work with DB2 for z/OS from the command line. You can update the personal or shared user profiles as follows:
   - Modify the CLASSPATH environment variable to include the `clp.jar` file.
   - Use the CLPPROPERTIESFILE environment variable to define the fully qualified name of the properties file for the command line processor.
   - Define the **db2** command as an alias for the command that starts the command line processor.
   - Specify the `DB2JccConfiguration.properties` file that defines the JDBC properties to be applied to the command line processor.

   You can use the following syntax to add the required entries to the `.profile` or `/etc/profile` file:

```
export CLPHOME=clp_install_dir
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=clp_properties_file_path
alias db2="java -Ddb2.jcc.propertiesFile=
/file_path/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

For example:

```
export CLPHOME=/shared/db2910_base
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=/wasv8config/clp.properties
alias db2="java -Ddb2.jcc.propertiesFile=
/wasv8config/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

2. In the properties file for the command line processor, define alias names that can be used to connect to the DB2 for z/OS server. An alias name definition includes the following entities:

   - A URL that specifies the domain name or IP address of the database server, the port on which the server listens, the DB2 location name defined during installation, and the property for the JDBC connection. The URL can take the form: *server:port/database* property=*value*. The port and property values are optional, and the DB2 location name must be specified in uppercase characters.
   - A user ID and an associated password that can be used to connect to the DB2 server. This user ID should correspond to the user ID (with SYSADM authority) that the DB2 system administrator uses to run the **createDB2.sh** script.

   You can add the required alias name entries to the properties file by using the following syntax:

   ```
   DB2ALIASNAME=URL,user_ID,password
   ```

   For example:

   ```
   DSNXWBD=localhost:9446/DSNXWBD,SYSADM1,SYSPWRD1
   ```

   Tip: When you define a *DB2ALIASNAME* value in the properties file, ensure that the correct connection details are specified to avoid connecting to the wrong database and inadvertently overwriting its contents.

3. Configure the DB2 DBACRVW subsystem parameter to enable user IDs with DBADM authority on a database to perform the following tasks for other user IDs: create views on tables in the database, create aliases for tables, and create materialized query tables. You can use the installation Command List (CLIST) to access the DSNTIPP ISPF panel and update the DBADM CREATE AUTH field to set DB2 ZPARM DBACRVW=YES.

Use the **createDB2.sh** script to either run the SQL to create the database objects for a specified database, or to consolidate the SQL statements into two .sql files that you can run later using other database tools.

Related tasks:

"Creating DB2 for z/OS database objects using the createDB2.sh script"
After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 1048
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating DB2 for z/OS database objects using the createDB2.sh script:

After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

You can also use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to create and populate databases.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a network deployment environment, you might define two DB2 for z/OS databases, where one database is used for the Common database component, which is cell-scoped, and another database is used for all the other components, which are cluster-scoped.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

The number of databases that you create for your IBM Business Process Manager installation can depend on your topology, and how you want to distribute your database objects across the DB2 for z/OS subsystem. Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created. For example:

- To create a single database, you can run **createDB2.sh** once from a directory that contains all the database scripts that were generated for all the IBM Business Process Manager components.
- To create multiple databases at the cell level and cluster levels, you can run **createDB2.sh** once from each directory that contains the database scripts required to create the database objects for the cell and clusters.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   cd /u/work/S4CELLDB

2. Run the **createDB2.sh** script by using the following syntax:

   createDB2.sh -DBAlias *alias_name* -DBName *database_name* -DBSto *storage_group_name* -DBCreate -DBVCat *volume_catalog* -DBUser *DB_user_ID* -RunSQL

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

-DBName
> Specifies the name of the database to be created.

-DBSto
> Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

-DBCreate
> Creates the database.

-DBVCat
> Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser
> Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

-RunSQL
> Runs the SQL statements that create the database objects.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN -RunSQL
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

3. Review the messages that are displayed in the console, checking that no error messages are displayed.

Tip: The first time that you run **createDB2.sh** to create the database, you see a few messages because the script first attempts to drop the database, which at that stage does not yet exist. These messages can be ignored, and subsequent invocations of **createDB2.sh** for the same database will not produce such messages.

When the script has finished running, you can also review the z_output.txt file, which provides an audit trail of the operations completed and status messages. This file is stored in the directory from which you ran the **createDB2.sh** script.

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 1045
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Solaris network deployment)" on page 949
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using the DB2 command line processor:

When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

You can also run these .sql files by using any other database tool of your choice, such as SPUFI or DSNTEP2.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a network deployment environment, you might define two DB2 for z/OS databases, where one database is used for the Common database component, which is cell-scoped, and another database is used for all the other components, which are cluster-scoped.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   ```
   cd /u/work/S4CELLDB
   ```

2. Run the **createDB2.sh** script by using the following syntax:

   ```
   createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate
   -DBVCat volume_catalog -DBUser DB_user_ID
   ```

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
   Specifies the name of the database to be created.

   -DBSto
   Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
   Creates the database.

-DBVCat
> Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser
> Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

Tip: By omitting the **-RunSQL** parameter, you bypass the execution of the SQL statements that create the database objects, and instead consolidate the statements into two .sql files.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

The z_schema.sql and z_schemaProc.sql files, which hold the consolidated SQL statements, are generated in the directory from which you ran the **createDB2.sh** script. The z_schemaProc.sql file contains SQL statements for stored procedures, and is generated in addition to z_schema.sql because stored procedures require the "at" sign (@) as a statement termination character when running the command line processor.

3. Run the DB2 command line processor in batch mode to execute the SQL in the z_schema.sql file:

   ```
   db2 -f /createDB2.sh_path/z_schema.sql
   ```

   For example:

   ```
   db2 -f /u/work/S4CELLDB/z_schema.sql
   ```
   The command line processor reads the data in the file, and processes the commands in the file consecutively.

4. Run the DB2 command line processor again to execute the SQL in the z_schemaProc.sql file, and additionally use the **-td** parameter to define @ as the statement termination character:

   ```
   db2 -td@ -f /createDB2.sh_path/z_schemaProc.sql
   ```

   For example:

   ```
   db2 -td@ -f /u/work/S4CELLDB/z_schemaProc.sql
   ```

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 1045
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Solaris network deployment)" on page 949
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using SPUFI or DSNTEP2:

You can use tools such as SPUFI or DSNTEP2 to run the database scripts that are used to create the DB2 for z/OS database objects for your configuration.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.

- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, which are required to create the database, into that directory.

  Tip: The generated scripts that you use to create the database objects can either be in ASCII or EBCDIC format. Typically, the generated `.sql` files are in ASCII format, and the equivalent `.ddl` files are in EBCDIC format.
- Use FTP to transfer the database scripts to the z/OS system that contains the DB2 for z/OS installation.
- Create or augment the profile.

You can create the database objects by using the tool of your choice. For example:

SPUFI A utility that runs SQL scripts from z/OS. SPUFI uses EBCDIC input.

DSNTEP2
   A sample dynamic SQL program provided with the DB2 for z/OS product.

1. Assign the appropriate read permissions to the SQL scripts; for example:

   ```
   chmod 644 createTable_AppScheduler.sql
   ```

2. If the tool that you want to use to view, edit, and run the scripts requires the scripts to be in EBCDIC format, rather than ASCII format, use the **iconv** command to convert the files to EBCDIC. For example:

   ```
   iconv -t IBM-1047 -f ISO8859-1 createTable_AppScheduler.sql >
   createTable_AppScheduler_EBCDIC.sql
   ```

   Important: After converting from ASCII to EBCDIC, check that no SQL statements exceed 71 characters in length. Longer lines will lead to line truncation and invalid statements when copying to fixed-width MVS data sets.

   Tip: If you have converted the files from ASCII format to EBCDIC, but need to run the files in ASCII format, you can also use **iconv** to convert the files back to ASCII. For example:

   ```
   iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >
   createTable_AppScheduler.sql
   ```

3. Edit the values in the `createDatabase.sql` and `dropDatabase.sql` files according to your requirements. The following symbolic variables need to be updated:

   ```
   @STOGRP@     = DB2 Storage group name
   @DB_NAME@    = DB2 Database name
   @SCHEMA@     = DB2 SQLID (Schema Qualifier)
   @BPTABLE4K@  = Buffer Pool of 4k Size
   @BPINDEX@    = Buffer Pool Index
   @VOLUMES@    = DB2 comma separated list of volume-ids
   @VCAT@       = DB2 integrated catalog facility name
   @DB_USER@    = The user ID which will be used to create the database objects
   ```

4. To create database objects outside of the z/OS UNIX environment by using SPUFI or DSNTEP2, copy the customized database scripts from z/OS UNIX to a partitioned data set.
5. Run the customized scripts by using the tool of your choice.

   Tip: If you previously ran the **createDB2.sh** script and chose to bypass execution of the SQL scripts, you can also run the consolidated SQL files (`z_schema.sql` and `z_schemaProc.sql`), which were generated.
6. Verify that the database tables are created successfully with no errors by inspecting the output.

Related tasks:

"Creating database design files and database scripts (Solaris network deployment)" on page 949
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 1048
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating the messaging engine data stores:

If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Before you create and run the database scripts:
- Create a cluster.
- Decide which service integration bus components you want to create in your network deployment configuration.

You must create and populate a messaging engine data source for each of the following components that you configure:
- Service Component Architecture system bus
- Service Component Architecture application bus
- Process Server
- Performance Data Warehouse
- Common Event Infrastructure

You can create all the database objects in one or more databases in the DB2 for z/OS subsystem. Take note of the following considerations:
- All messaging engines use the same table names. Therefore, the tables for each messaging engine require a unique schema qualifier.
- When you use the database design tool to define the database configuration for each messaging engine, you can specify a prefix for table space names:
  - If you intend to use a single database for all the messaging engines, specify a unique table space prefix for each messaging engine to make its table space name unique within the database.
  - If you intend to use a separate database for each messaging engine, the table space prefixes that you specify for the messaging engines can be identical or unique.
1. For each messaging engine, complete the following steps to generate the required database scripts:
   a. Run the database design tool (**DbDesignGenerator**) from the *install_root*/util/dbUtils directory.
   b. Select option **(2)Create a database design for a single component**, and then select the appropriate option for the messaging engine.
   c. Complete the remaining prompts in the tool to define the database configuration and to generate the scripts.

   Tip: As an alternative to running the database design tool multiple times to generate scripts for each of the messaging engines, you can run the tool once using option **(1)Create a database design for Standalone profile or Deployment Environment**. With this option, you can define the database configuration and generate database scripts for the following components in a single pass through the

tool: Common database, Business Process Choreographer, Performance Data Warehouse, Process Server, Business Space, and the six messaging engines.

2. Run the generated DDL scripts using the tool of your choice.

The messaging engine data stores are created.

Related tasks:

"Creating database design files and database scripts for a specific component with DB2 for z/OS in a network deployment environment" on page 955
You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

"Creating database design files and database scripts for deployment environments with DB2 for z/OS" on page 949
Use the database design tool to generate a design file that is used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool also generates database scripts that you can use to create your database tables.

Granting table privileges to the JCA authentication alias user ID:

If the schema name you are using is not the same as the JCA authentication alias user ID, you must grant a subset of DB2 for z/OS privileges to the JCA authentication alias user ID.

The database scripts for the service integration bus (SIB) contain commented GRANT commands that you can use as a basis for granting access to the SIB tables. However, the other IBM Business Process Manager components do not supply GRANT statements.

Use a schema name that is different from the JCA authentication alias to prevent the alias user ID from having the authority to drop tables. (The authority to drop tables is implicitly granted to the creator, that is, the schema.) Note that it does not make sense to grant a privilege like DBADM to the JCA authentication alias user ID because DBADM also has the ability to drop tables.

If you want IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the database scripts and editing them to construct GRANT commands from the CREATE commands. You can create GRANT commands like the one shown in the following example:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

where *userid/sqlid* is the JCA authentication alias user ID.

Note: Typically, the creator of a database object has implicit use of that object without requiring additional GRANT permissions. However, for DB2 for z/OS Version 10, additional GRANT permissions might be required for views because access to views is not implicitly granted to the creator.

Setting the correct schema name for the messaging engines:

To ensure that the service integration bus (SIB) messaging engines can access the appropriate DB2 for z/OS tables, the correct schema name must be set for the messaging engines. You can use the administrative console to change the schema names.

Start the server.

1. Log in to the administrative console.
2. Navigate to **Service Integration** > **Buses**.
3. For each messaging engine:
   a. Select **Messaging engines**, and then click the name that is displayed.

b. Click **Message store**.

   c. Change the value of **Schema name** to the name used when creating the DB2 for z/OS tables for this messaging engine.

   d. Click **Apply**.

   e. Save your configuration changes.

4. Verify that the messaging engines can be started:

   a. Log out of the administrative console.

   b. Stop, and then restart the server.

   c. Look in the output of the server log for successful SIB messaging engine startup messages. For example:

   ```
   BBOOO222I: "BusName"
   CWSID0016I: Messaging engine MessagingEngineName is in state Started.
   ```

Configuring a network deployment environment with an Oracle database server:

You can configure a network deployment environment for IBM Business Process Manager using an Oracle database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the `manageprofiles` command-line utility.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool on a 32-bit architecture. For 64-bit architectures on Solaris, use the `manageprofiles` command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).

- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
  7. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.
     c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

        When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
     d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
     e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
  8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
     - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
     - In the **Server name** field, enter a name for the server or accept the default value.
     - In the **Host name** field, enter a name for the host or accept the default value.
     - In the **Cell name** field, enter a name for the cell or accept the default value.

     Click **Next**.
  9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

     Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        - In the **Path** field, enter the directory path to the existing certificate.
        - In the **Password** field, enter the password for the certificate
        - In the **Keystore type** field, select the keystore type for the certificate you are importing.
        - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

- In the **Password** field, enter the password for the certificate
- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

   When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

   - `key.p12`: Contains the default personal certificate.
   - `trust.p12`: Contains the signer certificate from the default root certificate.
   - `root-key.p12`: Contains the root signing certificate.
   - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
   - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
   - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

   These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

   Ports are recognized as being in use if the following conditions are satisfied:

   - The ports are assigned to a profile created under an installation performed by the current user.
   - The ports are currently in use.

   Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

   If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

   profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

- `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
- `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with an Oracle database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

```
profile_root/properties/portdef.prop
```

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with an Oracle database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.

- In the **Cell name** field, enter a name for the cell or accept the default value.

  Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do

not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.

- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the `manageprofiles` command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.

- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
6. If you selected **Typical** profile creation, skip to the Federation step.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default.

The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the java.security file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- key.p12: Contains the default personal certificate.
- trust.p12: Contains the signer certificate from the default root certificate.
- root-key.p12: Contains the root signing certificate.
- default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Custom.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
   ```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
  2. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***/bin/ProfileManagement/pmt.sh**.
  3. Shut down any servers associated with a profile you plan to augment.
  4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application

Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

8. If you selected **Typical** profile creation, skip to the Federation step.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the

node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

Important:

Select **Federate this node later** if any one of the following situations is true:

- You plan to use this custom node as a migration target.
- Another profile is being federated. (Node federation must be serialized.)
- The deployment manager is not running or you are not sure if it is running.
- The deployment manager has the SOAP connector disabled
- The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
- The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
- The deployment manager does not have a JMX administrative port enabled.
- The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

Processing associated with federating the node as part of custom profile creation:

- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain

keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the `install_root`/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the `install_root`/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the `install_dir`/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the `install_root`/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    profile_root/bin/startManager.sh
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

    profile_root/bin
2. Run the **addNode** command.

    Run the following command from the command line if security is not enabled:

    ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port*

    Run the following command from the command line if security is enabled:

    ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port* -username
    userID_for_authentication -password *password_for_authentication*

An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

```
ADMU0003I: Node DMNDID2Node03 has been successfully federated.
```

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

⇨ Add managed nodes (WebSphere Application Server)

Configuring a network deployment environment with an SQL Server database server:

You can configure a network deployment environment for IBM Business Process Manager using a Microsoft SQL Server database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles with an SQL Server database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with an SQL Server database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1

After adding the lines, run the following command before starting the Profile Management Tool:

xrdb -load user_home/.Xdefaults

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root/profiles/profile_name`.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/`properties/portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    - Environment **Type**: Select how the Process Server is used:
        - Select **Production** if the server is to be used in a production capacity.
        - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
        - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

- `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
- `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Dmgr.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.sh -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with an SQL Server database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root/java/bin/java -Duser.language=*locale install_root*

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root/java/bin/java -Duser.language=de *install_root*/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

```
profile_root/properties/portdef.prop
```

> Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with an SQL Server database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.

- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones.

If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.
      - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.
16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available:

   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.

- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Dmgr.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool on 32-bit architectures. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root`/java/bin/java -Duser.language=de `install_root`/bin/ProfileManagement/startup.jar

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
6. If you selected **Typical** profile creation, skip to the Federation step.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root`/profiles/`profile_name`.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.
11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default.

The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root/properties/portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:

   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

   ```
   chmod 644 BPM_Custom.response
   ```

   Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.sh -create -templatePath install_root/profileTemplates/BPM/managed.procctr
   ```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager on a 32-bit architecture. For 64-bit architectures on Solaris, use the **manageprofiles** command-line utility.

Remember to shut down any servers associated with a profile you plan to augment.

When you use the Profile Management Tool with the Motif graphical user interface on the Solaris operating system, the default size of the Profile Management Tool might be too small to view all the messages and buttons. To fix the problem, add the following lines to the *install_root*/.Xdefaults file:

```
Eclipse*spacing:0
Eclipse*fontList:-misc-fixed-medium-r-normal-*-10-100-75-75-c-60-iso8859-1
```

After adding the lines, run the following command before starting the Profile Management Tool:

```
xrdb -load user_home/.Xdefaults
```

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root/java/bin/java -Duser.language=locale install_root
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root/java/bin/java -Duser.language=de install_root/bin/ProfileManagement/startup.jar
```

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*/**bin/ProfileManagement/pmt.sh**.
3. Shut down any servers associated with a profile you plan to augment.
4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application

Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

8. If you selected **Typical** profile creation, skip to the Federation step.

9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*/profiles/*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the

node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

Important:

Select **Federate this node later** if any one of the following situations is true:

- You plan to use this custom node as a migration target.
- Another profile is being federated. (Node federation must be serialized.)
- The deployment manager is not running or you are not sure if it is running.
- The deployment manager has the SOAP connector disabled
- The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
- The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
- The deployment manager does not have a JMX administrative port enabled.
- The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

Processing associated with federating the node as part of custom profile creation:

- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain

keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*/properties/profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*/BPM/samples/manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Use the **chmod** command to assign the appropriate permissions to your new copy of the response file. For example:

```
chmod 644 BPM_Custom.response
```

Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.sh -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.sh -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:

- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    profile_root/bin/startManager.sh

- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the bin directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

    profile_root/bin

2. Run the **addNode** command.

    Run the following command from the command line if security is not enabled:

    ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port*

    Run the following command from the command line if security is enabled:

    ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port* -username
    userID_for_authentication -password *password_for_authentication*

An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

```
ADMU0003I: Node DMNDID2Node03 has been successfully federated.
```

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

⏏ Add managed nodes (WebSphere Application Server)

Loading the database with system information in a network deployment environment:

If you are creating a network deployment environment, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

- In a network deployment (ND) environment, you must run this command after a server or cluster of servers is created. **For a cluster, you need to run the command only once**, specifying a single cluster member. Run this command after the database and its tables have been created, after the profile and deployment environment have been created, and before the first server is started. You do not need to rerun the command if you add another cluster member.

Run the bootstrap utility from the command line. The bootstrap utility is found in the deployment manager profile directory. For example:

> `Linux` `UNIX` *install_root*/profiles/Dmgr01/bin

> `Windows` *install_root*\profiles\Dmgr01\bin

Run the bootstrap utility using one of the following commands:

- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath*] **-clusterName** *cluster_name*
- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath*] **-nodeName** *node_name* **-serverName** *server_name*

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.
- **-clusterName** is the name of the application target cluster. You must specify either this parameter or the **-nodeName** and **-serverName** parameters.
- **-nodeName** is the name of the node. You must specify either this parameter and the **-serverName** parameter, or the **-clusterName** parameter.
- **-serverName** is the name of the server. You must specify either this parameter and the **-nodeName** parameter, or the **-clusterName** parameter.

The parameters are case-sensitive.

Important: For SQL Server only: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

You have loaded the database with system information prior to successfully starting the IBM Business Process Manager server. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*clusterName*.*timestamp*.log or bootstrapProcessServerData.*nodeName*.*serverName*.*timestamp*.log depending on the target you specified. The console displays a subset of the logged information.

Bootstrap data onto a server that is part of an ND environment but not part of a cluster:

```
bootstrapProcessServerData -nodeName node01 -serverName server1
```

Bootstrap data onto a cluster that hosts the Process Server or Process Center:

```
bootstrapProcessServerData -clusterName myAppCluster
```

Modifying an existing installation:

After you install and configure the runtime environment on your system in IBM Business Process Manager, you might want to customize your configuration. For example, you might want to customize settings, set up an additional security provider, set up user accounts, and change and encrypt passwords.

Installing and configuring IBM Business Process Manager on Windows

Install IBM Business Process Manager on Windows, and configure a stand-alone or network deployment environment.

Configuring a stand-alone environment on Windows

You can use a typical installation to install the software and configure a stand-alone Process Center or Process Server profile. Or you can choose custom installation and then create profiles, giving you more control over how to configure your software.

Typical installation and configuration:

The Typical installation option is the simplest and quickest method for installing and configuring IBM Business Process Manager.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Related reference:

➠ IBM Business Process Manager Standard system requirements

Installing and configuring IBM Business Process Manager with a new DB2 Express database server:

The typical installation can install DB2 Express on Windows and configure the required databases for IBM Business Process Manager. Only select this path if you have administrative privileges (Administrator user) and do not have an existing DB2 database server on the system.

Installing and configuring Process Center with a new DB2 Express database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

The typical installation installs DB2 Express and configures the required databases for IBM Business Process Manager. Only select this path if you have administrative privileges (Administrator user) and do not have an existing DB2 database server on the system.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   `C:\`*HOMEPATH*`\bpm_updates.properties`

   On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\`*user_name*`\`

   On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\`*user_name*`\`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=C:\bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=C:\launchpad_updates
   fixpack.WAS_REP=C:\WAS_updates
   fixpack.BPM_REP=C:\BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

   (from a command line) *extract_directory*`\launchpad.exe`

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information.
   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.
   - **Location**: Click **Browse** to change the installation location for Process Center and Process Designer.

   Restriction: Because you are installing DB2 Express, your installation location cannot contain National Language Strings (NLS).

7. Specify the values for the new DB2 database server. The default values are:
   - Administrative user name and password: `bpmadmin` and `Db2pswd!`

   Restriction: User names must not contain National Language Strings (NLS).

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center and Process Designer.

Note: The Process Designer is supported on the Windows platform only.

If you used the Windows domain user ID to create a new DB2 Express database and tables, and profile creation failed, use one of the following solutions:

- Log into the Windows system as a local system user and run the Profile Management Tool to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" and then create a profile.

Related information:

⬀ Installation Manager updates

Installing and configuring Process Server with a new DB2 Express database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

The typical installation installs DB2 Express and configures the required databases for IBM Business Process Manager. Only select this path if you have administrative privileges (Administrator user) and do not have an existing DB2 database server on the system.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or `manageprofiles` command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   `C:\`*HOMEPATH*`\bpm_updates.properties`

   On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\`*user_name*`\`

   On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\`*user_name*`\`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=C:\bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=C:\launchpad_updates
   fixpack.WAS_REP=C:\WAS_updates
   fixpack.BPM_REP=C:\BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

   (from a command line) *extract_directory*`\launchpad.exe`

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:
   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.

     Restriction: Because you are installing DB2 Express, your installation location cannot contain National Language Strings (NLS).
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.
7. Specify the values for the new DB2 database server. The default values are:
   - Administrative user name and password: `bpmadmin` and `Db2pswd!`

   Restriction: User names must not contain National Language Strings (NLS).
8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.
9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.
10. Click **Install Software**.

You have installed a fully functional Process Server.

If you used the Windows domain user ID to create a new DB2 Express database and tables, and profile creation failed, use one of the following solutions:

- Log into the Windows system as a local system user and run the Profile Management Tool to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" and then create a profile.

Related information:

➡ Installation Manager updates

Installing and configuring IBM Business Process Manager with a DB2 database server:

You can install IBM Business Process Manager using a DB2 database server. You must make sure the required databases are available before you install.

Creating DB2 databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

Installing and configuring Process Center with a DB2 database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty. The databases must be created with at least a 32K page size.

Be prepared to specify the following information during installation:

- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.

- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   `C:\`*`HOMEPATH`*`\bpm_updates.properties`

   On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\`*`user_name`*`\`

   On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\`*`user_name`*`\`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=C:\bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=C:\launchpad_updates
   fixpack.WAS_REP=C:\WAS_updates
   fixpack.BPM_REP=C:\BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

      (from a command line) *`extract_directory`*`\launchpad.exe`

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:
   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.
   - **Location**: Click **Browse** to change the installation location for Process Center and Process Designer.

7. Specify the required database information.

Table 119. Required database configuration fields for DB2

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of `50000` or enter the correct server port number.
Username	Enter the user name to authenticate with the database. **Restriction:** User names must not contain National Language Strings (NLS).
Password	Enter an encrypted password to authenticate with the database.
Common database name	Enter the name for the Common database.
Process Center database name	Enter the name for the Process Center database.
Performance Data Warehouse database name	Enter the name for the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center and Process Designer.

Note: The Process Designer is supported on the Windows platform only.
Related information:

⮞ Installation Manager updates

Installing and configuring Process Server with a DB2 database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty. The databases must be created with at least a 32K page size.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port

- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   ```
   C:\HOMEPATH\bpm_updates.properties
   ```

   On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\user_name\`

   On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\user_name\`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=C:\bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=C:\launchpad_updates
   fixpack.WAS_REP=C:\WAS_updates
   fixpack.BPM_REP=C:\BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

   (from a command line) *extract_directory*`\launchpad.exe`

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:
   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

- Select **Test** if the server is to be used as a testing environment, for example, for load testing.
- Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

Restriction: Do not mix production and non-production servers in the same cell.

Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 120. Required database configuration fields for DB2

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of `50000` or enter the correct server port number.
Username	Enter the user name to authenticate with the database. **Restriction:** User names must not contain National Language Strings (NLS).
Password	Enter an encrypted password to authenticate with the database.
Common database name	Enter the name for the Common database.
Process Server database name	Enter the name for the Process Server database.
Performance Data Warehouse database name	Enter the name for the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required

fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

If you used the Windows domain user ID to create a new DB2 Express database and tables, and profile creation failed, use one of the following solutions:

- Log into the Windows system as a local system user and run the Profile Management Tool to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" and then create a profile.

Related information:

➦ Installation Manager updates

Installing and configuring IBM Business Process Manager with an Oracle database server:

You can install IBM Business Process Manager using an Oracle database server. You must make sure the required databases are available before you install.

Creating Oracle databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

Installing and configuring Process Center with an Oracle database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   `C:\`*HOMEPATH*`\bpm_updates.properties`

   On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\`*user_name*`\`

   On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\`*user_name*`\`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=C:\bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=C:\launchpad_updates
   fixpack.WAS_REP=C:\WAS_updates
   fixpack.BPM_REP=C:\BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

   (from a command line) *extract_directory*`\launchpad.exe`

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:

   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.

   - **Location**: Click **Browse** to change the installation location for Process Center and Process Designer.

7. Specify the required database information.

Table 121. Required database configuration fields for Oracle

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.

Table 121. Required database configuration fields for Oracle (continued)

Field	Action needed
Port	Accept the default value of 1521 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database System Identifier	Enter the correct Process Center database System Identifier.
Common database	For the Common database, enter values for the following parameters: • **User name**: Enter the Common database user name. • **Password**: Enter an encrypted password to authenticate with the Common database.
Process Center database	For the Process Center database, enter values for the following parameters: • **User name**: Enter the Process Center database user name. • **Password**: Enter an encrypted password to authenticate with the Process Center database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name**: Enter the Performance Data Warehouse database user name. • **Password**: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center and Process Designer.

Note: The Process Designer is supported on the Windows platform only.
Related information:

➦ Installation Manager updates

Installing and configuring Process Server with an Oracle database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   `C:\HOMEPATH\bpm_updates.properties`

   On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\user_name\`

   On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\user_name\`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=C:\bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=C:\launchpad_updates
   fixpack.WAS_REP=C:\WAS_updates
   fixpack.BPM_REP=C:\BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

   (from a command line) *extract_directory*\launchpad.exe

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:

- **Hostname**: This field shows the name of your machine.
- **Location**: Click **Browse** to change the installation location.
- Environment **Type**: Select how the Process Server is used:
  - Select **Production** if the server is to be used in a production capacity.
  - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
  - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
- Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

Restriction: Do not mix production and non-production servers in the same cell.

Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 122. Required database configuration fields for Oracle

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1521 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database System Identifier	Enter the correct Process Center database System Identifier.
Common database	For the Common database, enter values for the following parameters: • **User name**: Enter the Common database user name. • **Password**: Enter a password to authenticate with the Common database.

Table 122. Required database configuration fields for Oracle (continued)

Field	Action needed
Process Server database	For the Process Server database, enter values for the following parameters: • **User name**: Enter the Process Server database user name. • **Password**: Enter an encrypted password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name**: Enter the Performance Data Warehouse database user name. • **Password**: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

If you used the Windows domain user ID to create a new DB2 Express database and tables, and profile creation failed, use one of the following solutions:

• Log into the Windows system as a local system user and run the Profile Management Tool to create a profile.

• Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" and then create a profile.

Related information:

⮕ Installation Manager updates

Installing and configuring IBM Business Process Manager with an SQL Server database server:

You can install IBM Business Process Manager using a Microsoft SQL Server database server. You must make sure the required databases are available before you install.

Creating SQL Server databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must make sure the databases are available before you install IBM Business Process Manager using a typical installation.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:

   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
      ```

      where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.

   b. To create the Common database:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
      ```

      The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

   Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

   ```
   org.springframework.beans.factory.BeanCreationException: Error creating bean with name
   'message.routingCache'
   defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
   org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
   [com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
   nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
   bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
   com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

   Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
   at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
   at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
   (SQLServerPreparedStatement.java:388)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
   (SQLServerPreparedStatement.java:338)
   at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
   at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
   at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
   at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
   at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
   (SQLServerPreparedStatement.java:281)
   at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
   at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
   at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
   [...]
   ```

   When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

   ```
   com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
       at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
       at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
   ```

```
        at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
        at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
        at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**..

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

   e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

   f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

   On Windows Vista and Windows 7:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

   c. Right-click **Local DTC** and then select **Properties**.

   d. Click the **Security** tab on the **Local DTC Properties** dialog box.

   e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

   f. Click **OK** again to close the Properties dialog box, and then close Component Services.

   g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

b. Unzip archive to any folder.

c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the `x86` folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the `x64` folder.

d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Installing and configuring Process Center with an SQL Server database server:

Process Center includes a repository for all processes, services, and other assets created in the IBM Business Process Manager authoring environments. You can use the integrated Process Server within Process Center to run processes as you build them. When you are ready, you can install and run those same processes on the Process Server in your runtime environments.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
- The user name and password for database authentication
- The database server host name and port
- The name of the Process Center or Process Server database.
- The name of the Performance Data Warehouse database.
- The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   `C:\HOMEPATH\bpm_updates.properties`

   On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\user_name\`

   On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\user_name\`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

```
ifix.1=C:\bpmUpdates
fixpack.2=http://test/rep
launchpad.1=C:\launchpad_updates
fixpack.WAS_REP=C:\WAS_updates
fixpack.BPM_REP=C:\BPM_updates
```

2. Start the launchpad. You can run only one launchpad at a time.

   To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

   (from a command line) *extract_directory*\launchpad.exe

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Center**.

6. Optionally change the location information:

   - **Hostname**: This field shows the name of your machine.

     Important: If a value of localhost or 127.0.0.1 is used for the hostname, Process Designer installations on a remote system will not be able to connect to the Process Center.

   - **Location**: Click **Browse** to change the installation location for Process Center and Process Designer.

7. Specify the required database information.

Table 123. Required database configuration fields for SQL Server

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1433 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Center database name	Enter the Process Center database name.
Performance Data Warehouse database name	Enter the Performance Data Warehouse database name.
Select the **Apply Windows authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the remaining fields are made inactive.	
Common database	For the Common database, enter values for the following parameters: • **User name**: Enter the Common database user name. • **Password**: Enter an encrypted password to authenticate with the Common database.

Table 123. Required database configuration fields for SQL Server (continued)

Field	Action needed
Process Center database	For the Process Center database, enter values for the following parameters: • **User name**: Enter the Process Center database user name. • **Password**: Enter an encrypted password to authenticate with the Process Center database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name**: Enter the Performance Data Warehouse database user name. • **Password**: Enter a password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Center and Process Designer.

Note: The Process Designer is supported on the Windows platform only.

Related information:

⇨ Installation Manager updates

Installing and configuring Process Server with an SQL Server database server:

Process Server provides a single BPM runtime environment that can support a range of business processes for test, staging, or production.

To install IBM Business Process Manager Standard using the typical installation, you must confirm that the Process Center or Process Server database, Performance Data Warehouse database, and Common database already exist and that they are empty.

Be prepared to specify the following information during installation:
• The user name and password for database authentication
• The database server host name and port
• The name of the Process Center or Process Server database.
• The name of the Performance Data Warehouse database.
• The name of the Common database.

The typical installation installs the software and configures a stand-alone profile. You do not need to create a profile later using the Profile Management Tool or **manageprofiles** command.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Optional: If you are connected to the Internet, the typical installation upgrades your product to the latest refresh pack and interim fix level automatically. If you want these upgrades to be installed from a local directory instead, or if you want to specify the fix level, you can use a properties file to tell the Installation Manager where to find the upgrades and which upgrades to install.

   Create the following file:

   `C:\`*HOMEPATH*`\bpm_updates.properties`

   On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\`*user_name*`\`

   On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\`*user_name*`\`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

   The file uses three prefixes: ifix, fixpack, and launchpad. Each prefix must be followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for ifixes, fixpacks, and launchpad upgrades. The locations can be either local directories or URLs. For example:

   ```
   ifix.1=C:\bpmUpdates
   fixpack.2=http://test/rep
   launchpad.1=C:\launchpad_updates
   fixpack.WAS_REP=C:\WAS_updates
   fixpack.BPM_REP=C:\BPM_updates
   ```

2. Start the launchpad. You can run only one launchpad at a time.

   To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

   (from a command line) *extract_directory*`\launchpad.exe`

3. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically. If you do not have access to the Internet and want the updates to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates and which updates to install, using the launchpad prefix as described in step 1.

4. After starting the launchpad, click **Typical installation** on the Welcome page.

5. Select **Process Server**.

6. Specify Process Server information:
   - **Hostname**: This field shows the name of your machine.
   - **Location**: Click **Browse** to change the installation location.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.
   - Environment **Name**: The environment name is used to connect from a Process Center to this Process Server.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment **Type** or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline Process Server differs from the method for deploying process applications to an online Process Server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Hostname**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

7. Specify the required database information.

Table 124. Required database configuration fields for SQL Server

Field	Action needed
Hostname	Accept the default value of `localhost` or enter the correct database server host name. For example, the IP address.
Port	Accept the default value of 1433 or enter the correct server port number.
Common database name	Enter the name for the Common database.
Process Server database name	Enter the Process Server database name.
Performance Data Warehouse database name	Enter the Performance Data Warehouse database name.
Select the **Apply Windows authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the remaining fields are made inactive.	
Common database	For the Common database, enter values for the following parameters: • `User name`: Enter the Common database user name. • `Password`: Enter a password to authenticate with the Common database.
Process Server database	For the Process Server database, enter values for the following parameters: • `User name`: Enter the Process Server database user name. • `Password`: Enter an encrypted password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • `User name`: Enter the Performance Data Warehouse database user name. • `Password`: Enter an encrypted password to authenticate with the Performance Data Warehouse database.

8. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

    The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

    You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

9. On the Licenses page, verify the installation options and read the license agreements. If you agree to the terms of the license agreements, click **I have read and accepted the license agreement and notices** and click **Next**.

10. Click **Install Software**.

You have installed a fully functional Process Server.

If you used the Windows domain user ID to create a new DB2 Express database and tables, and profile creation failed, use one of the following solutions:

- Log into the Windows system as a local system user and run the Profile Management Tool to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" and then create a profile.

Related information:

➦ Installation Manager updates

Custom installation and configuration:

Use the Custom installation option to install IBM Business Process Manager if you need any installation or configuration options that are not provided by the Typical installation option, if you want to install silently, or if you want to install on an existing installation of WebSphere Application Server.

Related reference:

➦ IBM Business Process Manager Standard system requirements

Installing IBM Business Process Manager Standard:

With custom installation, you can select interactive or silent installation. Select interactive installation if you want to install on an existing WebSphere Application Server.

Related reference:

➦ IBM Business Process Manager Standard system requirements

Installing IBM Business Process Manager Standard interactively:

You can install the IBM Business Process Manager product package interactively.

Before you install IBM Business Process Manager, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if

you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

Related reference:

⮕ IBM Business Process Manager Standard system requirements

Installing interactively with a new installation of WebSphere Application Server:

Using custom installation, you can install IBM Business Process Manager with a new installation of WebSphere Application Server.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Access the media in one of the following ways, depending on whether you are installing from the product DVD or from images downloaded from Passport Advantage. You can run only one launchpad at a time.

    - If you are installing from the product DVD, insert the product disk labeled IBM Business Process Manager Standard into the disk drive. If autorun is enabled on your workstation, the launchpad program automatically opens, and you can proceed to the next step. If autorun is not enabled on your workstation, enter the following command to start the launchpad manually:

        To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

        (from a command line) `DVD_root\launchpad.exe`

    - If you are installing from images downloaded from Passport Advantage, perform the following steps:

        a. Go to the directory into which you extracted the images.

        b. Enter the following command to start the launchpad:

            To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

            (from a command line) `extract_directory\launchpad.exe`

2. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically.

    If you do not have access to the Internet and want updates to the launchpad to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates. Create the following file:

    `C:\HOMEPATH\bpm_updates.properties`

    On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\user_name\`

    On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\user_name\`

    Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

    The file uses a launchpad prefix, followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for launchpad upgrades. The locations can be either local directories or URLs. For example:

```
ifix.1=C:\bpmUpdates
fixpack.2=http://test/rep
launchpad.1=C:\launchpad_updates
fixpack.WAS_REP=C:\WAS_updates
fixpack.BPM_REP=C:\BPM_updates
```

3. After starting the launchpad, click **Custom installation** on the Welcome page.

4. Click **Install as administrative user** to install as an administrative user. If you are in the Administrators group, you can install as an administrative user. If you are not an administrative user, or if you want to install to your own user name without administrative privileges, clear this check box.

5. Click **Install**. When you install IBM Business Process Manager, the required WebSphere Application Server Network Deployment is automatically installed.

6. On the Install Packages page of the Installation Manager, select the **IBM Business Process Manager Standard** package.

7. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

8. On the Licenses page, read the license agreement. If you agree to the terms of the license agreement, click **I accept the terms in the license agreements** and click **Next**.

9. On the Location page, the **Create new package group** option is selected by default. Select a location for the shared resources directory and a location for the Installation Manager and click **Next**. The Install Packages wizard checks your system for operating system prerequisites. If you are at a higher major release of a supported operating system, or if the operating system itself is not on the supported list, you might encounter a warning. You can continue with the installation, but the installation or product operation might not succeed until you apply maintenance.

   If you see a warning, go to the product support web pages and obtain the latest maintenance packages to apply after installation. See the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

10. On the Features page, expand the plus symbol to select the package features that you want to install. Installation Manager automatically enforces any dependencies with other features and shows the updated download size and disk space requirements for the installation.

    a. Optional: To see the dependency relationships between features, select **Show Dependencies**.

    b. Optional: Click a feature to view its brief description under **Details**.

    c. Optional: If you are installing Process Server, you can expand the Process Server feature and change the Process Server use. Select "Production" (the default) to use the server in production, or "Non-production" to use the server only for test, staging, or development. Your selection is recorded in the product tag for inventory purposes.

    Restriction: Do not mix production and non-production servers in the same cell.

    When you are finished selecting features, click **Next**.

11. On the Summary page, review your choices before installing the IBM Business Process Manager Standard package. If you want to change the choices that you made on previous pages, click **Back** and make your changes. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.

12. When the installation process is complete, a message confirms the success of the process.

a. Optional: Click **View Log File** to open the installation log file for the current session in a new window. You must close the Installation Log window to continue.

b. Select **Profile Management Tool** if you want to run the Profile Management Tool when you finish or select **None** to complete the installation.

c. Click **Finish** to close the Installation Manager.

Related information:

↪ Installation Manager updates

Installing interactively with a new DB2 Express database and a new installation of WebSphere Application Server:

The custom installation can install DB2 Express on Windows and configure the required databases for IBM Business Process Manager. Only select this path if you have administrative privileges (Administrator user) and do not have an existing DB2 database server on the system.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Access the media in one of the following ways, depending on whether you are installing from the product DVD or from images downloaded from Passport Advantage. You can run only one launchpad at a time.

   • If you are installing from the product DVD, insert the product disk labeled IBM Business Process Manager Standard into the disk drive. If autorun is enabled on your workstation, the launchpad program automatically opens, and you can proceed to the next step. If autorun is not enabled on your workstation, enter the following command to start the launchpad manually:

     To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

       (from a command line) `DVD_root\launchpad.exe`

   • If you are installing from images downloaded from Passport Advantage, perform the following steps:

     a. Go to the directory into which you extracted the images.

     b. Enter the following command to start the launchpad:

        To install or run IBM Business Process Manager Standard on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click `launchpad.exe` and select **Run as administrator**.

          (from a command line) `extract_directory\launchpad.exe`

2. Optional: If you see a message that prompts you to update the launchpad, click **Update** to receive the latest updates. The updates are installed and your launchpad is restarted automatically.

   If you do not have access to the Internet and want updates to the launchpad to be installed from a local directory, you can use a properties file to tell the Installation Manager where to find the updates. Create the following file:

     `C:\HOMEPATH\bpm_updates.properties`

     On Windows XP, the HOMEPATH environment variable points to `C:\Documents and Settings\user_name\`

     On Windows 7, Windows Vista, or Windows Server 2008, the HOMEPATH environment variable points to `C:\Users\user_name\`

   Note: Ensure that you have read/write access to the folders specified in the `bpm_updates.properties` file.

The file uses a launchpad prefix, followed by a dot. The part of the name after the prefix and the dot can be anything you want, which enables you to point to multiple locations for launchpad upgrades. The locations can be either local directories or URLs. For example:

```
ifix.1=C:\bpmUpdates
fixpack.2=http://test/rep
launchpad.1=C:\launchpad_updates
fixpack.WAS_REP=C:\WAS_updates
fixpack.BPM_REP=C:\BPM_updates
```

3. After starting the launchpad, click **Custom installation** on the Welcome page.

4. Click **Install as administrative user** to install as an administrative user. If you are in the Administrators group, you can install as an administrative user. If you are not an administrative user, or if you want to install to your own user name without administrative privileges, clear this check box.

5. Click **Install**. When you install IBM Business Process Manager, the required WebSphere Application Server Network Deployment is automatically installed.

6. On the Install Packages page of the Installation Manager, select the **IBM Business Process Manager Standard** package. Select IBM DB2 Express to install and use an embedded DB2 Express database.

7. Click **Next** to continue. You are prompted to provide your IBM ID and password to connect to the IBM service repositories.

   The connection to the service repositories is required to download and install any fix packs and required interim fixes from the Internet, including fixes for WebSphere Application Server and IBM Business Process Manager. An IBM ID and password can be obtained by registering at http://www.ibm.com.

   You can click **Cancel** to continue installing without downloading the required fixes from the Internet. After successfully installing the product, you can use Installation Manager to install the required fixes. See Installing the required fixes for the IBM Business Process Manager V8.0 products and IBM Business Monitor V8.0 for more information about downloading and installing the required fixes.

8. On the Licenses page, read the license agreement. If you agree to the terms of the license agreement, click **I accept the terms in the license agreements** and click **Next**.

9. On the Location page, the **Create new package group** option is selected by default. Select a location for the shared resources directory and a location for the Installation Manager and click **Next**. The Install Packages wizard checks your system for operating system prerequisites. If you are at a higher major release of a supported operating system, or if the operating system itself is not on the supported list, you might encounter a warning. You can continue with the installation, but the installation or product operation might not succeed until you apply maintenance.

   If you see a warning, go to the product support web pages and obtain the latest maintenance packages to apply after installation. See the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

   Attention: Because you are installing DB2 Express, your installation location cannot contain National Language Strings (NLS).

10. On the Features page, expand the plus symbol to select the package features that you want to install. Installation Manager automatically enforces any dependencies with other features and shows the updated download size and disk space requirements for the installation.

    a. Optional: To see the dependency relationships between features, select **Show Dependencies**.

    b. Optional: Click a feature to view its brief description under **Details**.

    c. Optional: If you are installing Process Server, you can expand the Process Server feature and change the Process Server use. Select "Production" (the default) to use the server in production, or "Non-production" to use the server only for test, staging, or development. Your selection is recorded in the product tag for inventory purposes.

       Restriction: Do not mix production and non-production servers in the same cell.

    When you are finished selecting features, click **Next**.

11. Optional: Specify the DB2 administrative **User name** and **Password** on the Common Configurations page. The default administrative user name is `bpmadmin`. Choose a password that complies with the password policy of your system (for example, Windows 2008).

    Click **Re-Validate** to confirm that your choices are correct.

    Restriction: User names must not contain National Language Strings (NLS).

12. On the Summary page, review your choices before installing the IBM Business Process Manager Standard package. If you want to change the choices that you made on previous pages, click **Back** and make your changes. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.

13. When the installation process is complete, a message confirms the success of the process.

    a. Optional: Click **View Log File** to open the installation log file for the current session in a new window. You must close the Installation Log window to continue.

    b. Select **Profile Management Tool** if you want to run the Profile Management Tool when you finish or select **None** to complete the installation.

    c. Click **Finish** to close the Installation Manager.

If you used the Windows domain user ID to create a new DB2 Express database and tables, and profile creation failed, use one of the following solutions:

- Log into the Windows system as a local system user and run the Profile Management Tool to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" and then create a profile.

Related information:

➡ Installation Manager updates

Installing IBM Business Process Manager silently:

You can install the IBM Business Process Manager product package in *silent* installation mode. When you install in silent mode, the user interface is not available.

Before you install IBM Business Process Manager, review the system requirements for the product.

Operating system and software prerequisite levels are particularly important. Although the installation process automatically checks for prerequisite operating system patches, review the system requirements if you have not already done so. The system requirements link lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system. It also lists the required levels of all prerequisite software.

Related reference:

➡ IBM Business Process Manager Standard system requirements

Installing silently using the command line:

You can install IBM Business Process Manager silently using the command line.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Standard installation, you must install them as part of the silent installation. The required base products are:

- Installation Manager
- WebSphere Application Server Network Deployment, including the ejbdeploy and thinclient features.

The silent installation performs the following tasks:

- Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
- Installs the required base products and IBM Business Process Manager Standard.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Run the following command to generate encrypted passwords using IBM Installation Manager to securely connect to DB2 and the administrative console.

   Important: If you are running Windows 7, Windows Vista, or Windows Server 2008, start your command prompt by right-clicking and selecting **Run as administrator**.

   ```
   extract_directory\IM\tools\imutilsc -silent -nosplash encryptString password_to_encrypt
   ```

2. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.

3. Run the following command:

   Important: If you are running Windows 7, Windows Vista, or Windows Server 2008, start your command prompt by right-clicking and selecting **Run as administrator**.

   ```
   extract_directory\IM\tools\imcl install list_of_product_IDs -acceptLicense
   -installationDirectory location -repositories repository
   -properties key=value,key=value -showVerboseProgress -log logName.log
   ```

   where:
   - *list_of_product_IDs* is a list of the IDs for the products and features that you want to install. You must include the required features. The syntax is *productID,feature,feature*, with multiple products separated by spaces.

Table 125. Product IDs

Product	Product ID	Feature	Description
IBM BPM Standard	com.ibm.bpm.STD.V80	bpmStd.nonprod	Test, staging, or development use. You must specify either this feature or bpmStd.prod.
		bpmStd.prod	Production use. You must specify either this feature or bpmStd.nonprod.

Table 125. Product IDs (continued)

Product	Product ID	Feature	Description
WebSphere Application Server Network Deployment	com.ibm.websphere.ND.v80	core.feature	Required. WebSphere Application Server core content.
		ejbdeploy	Required. Pre-Enterprise JavaBeans (EJB) 3.0 modules.
		thinclient	Required. Stand-alone thin clients and resource adapters.
		embeddablecontainer	Embeddable EJB container.
		samples	Sample applications feature.
		com.ibm.sdk.6_32bit	32-bit software development kit (SDK). You must specify either this feature or com.ibm.sdk.6_64bit.
		com.ibm.sdk.6_64bit	64-bit SDK This feature can only be selected on a 64-bit system. You must specify either this feature or com.ibm.sdk.6_32bit.
Installation Manager	com.ibm.cic.agent	agent_core	Installation Manager core content.
		agent_jre	Installation Manager Java Runtime Environment (JRE).
DB2 Express for Windows 32-bit	com.ibm.ws.DB2EXP97. winia32	n/a	DB2 must match the operating system and bitness.
DB2 Express for Windows 64-bit	com.ibm.ws.DB2EXP97. winia64	n/a	DB2 must match the operating system and bitness.

- *location* is the path to the directory where you want to install the products.
- *repository* is the path to the repository where you have extracted the files, one of the following directories:

  extract_directory\repository\repos_32bit
  extract_directory\repository\repos_64bit

  For more than one repository, separate the repository locations with commas.
- *key=value* is a list of the keys and values you want to pass to the installation, separated by commas. Do not put spaces between the commas. Create encrypted passwords using the IBM Installation Manager.

Table 126. Keys

Key	Description
user.db2.admin.username	User name with authority to access the DB2 database. The default value is *bpmadmin*.

Table 126. Keys (continued)

Key	Description
user.db2.use.existing	If you are using an existing DB2 database server, add the following line exactly: `user.db2.use.existing=true` If DB2 must be installed, specify the value *false*.
user.db2.port	Port for the DB2 database. The default value is 50000.

- *logName* is the name of the log file to record messages and results.

  Running this command installs the product with the default features. If you want to install specific features or make other changes, see the reference link for the command-line arguments for imcl.

Installation Manager installs the list of products and writes a log file to the directory that you specified.

The following example installs IBM Business Process Manager Standard, WebSphere Application Server Network Deployment, and DB2 Express on Windows.

```
imcl install com.ibm.bpm.STD.V80,bpmStd.prod com.ibm.websphere.ND.v80,core.feature,ejbdeploy,
thinclient,embeddablecontainer,samples,com.ibm.sdk.6_32bit
com.ibm.ws.DB2EXP97.winia32 -acceptLicense -installationDirectory C:\IBM\BPM80
-repositories D:\temp\BPM\repository
-properties user.db2.admin.username=bpmadmin,user.db2.admin.password=Vvrs88V/a9BUdxwodz0nUg==
-showVerboseProgress -log silentinstall.log
```

Define a stand-alone server or deployment manager profile in the Profile Management Tool or using the **manageprofiles** command-line utility. Only profiles created with the Profile Management Tool or **manageprofiles** can be used in production.

Related reference:

⬕ Command-line arguments for imcl

⬕ IBM Business Process Manager Standard system requirements

Related information:

⬕ IBM WebSphere Application Server Information Center

Installing silently using a response file:

You can install IBM Business Process Manager Standard silently by creating a response file and then running a command to use that response file to install the product.

If you do not have the prerequisite base products necessary for IBM Business Process Manager Standard installation, you must install them as part of the silent installation. The required base products are:
- Installation Manager
- WebSphere Application Server Network Deployment, including the ejbdeploy and thinclient features.

The silent installation performs the following tasks:
- Installs Installation Manager if it is not already installed or updates it to the appropriate level if it is installed.
- Installs the required base products and IBM Business Process Manager Standard.

Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

1. Run the following command to generate encrypted passwords using IBM Installation Manager to securely connect to DB2 and the administrative console.

   Important: If you are running Windows 7, Windows Vista, or Windows Server 2008, start your command prompt by right-clicking and selecting **Run as administrator**.

   `extract_directory\IM\tools\imutilsc -silent -nosplash encryptString password_to_encrypt`

2. Create the response file that will install the required base products and IBM Business Process Manager Standard. Copy the sample response file from the following directory to create your own response file:

   `extract_directory\responsefiles\BPM\template_response.xml`

3. Modify the parameters as directed in the text of the response file template to create your response file.

   Make the following changes:

   - Set your repository location. Choose the appropriate 32-bit or 64-bit repository, and comment out the one that you are not using. If you are not running directly from the `extract_directory\responsefiles\BPM\` directory, point to the location of your installation repository. The repository can be local or remote. If you are running from the DVD, copy the response file from the DVD and point it back at the repository on the DVD.
   - Set the replacement variables in the response file as follows:
     - ${INSTALL_LOCATION_IM} - The location where IBM Installation Manager is already installed or will be installed.
     - ${LOCATION_ECLIPSE_CACHE} - The location of the Eclipse cache. This location must be set only if the location has not already been defined. Comment out this line if the location has already been set.
     - ${INSTALL_LOCATION} - The location where you want to install the product.
     - ${FEATURE_LIST} - The list of features for the product. This list must be replaced with the list of features that you want installed. Follow the instructions included in the `template_response.xml` file.

       Tip: You must specify either the production or the non-production feature, but not both.
   - If you are installing DB2 Express, follow the instructions in the `template_response.xml` file for providing the necessary user IDs and passwords. Use the instructions in step 1 for generating the encrypted passwords to include.

4. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.

5. Run the following command:

   Important: If you are running Windows 7, Windows Vista, or Windows Server 2008, start your command prompt by right-clicking and selecting **Run as administrator**.

   Administrator:

   `extract_directory\IM\installc.exe -acceptLicense input`
   `extract_directory\responsefiles\BPM\template_response.xml`
   `-log preferred_log_location\silent_install.log`

   Nonadministrator:

   `extract_directory\IM\userinstc.exe -acceptLicense input`
   `extract_directory\responsefiles\BPM\template_response.xml`
   `-log preferred_log_location\silent_install.log`

Installation Manager installs any required prerequisites and IBM Business Process Manager Standard, and writes a log file to the directory you specified.

Define a stand-alone server or deployment manager profile in the Profile Management Tool or using the **manageprofiles** command-line utility. Only profiles created with the Profile Management Tool or **manageprofiles** can be used in production.

Related tasks:

⬀ Installing silently by using Installation Manager

⬀ Recording a response file with Installation Manager

Related reference:

⬀ IBM Business Process Manager Standard system requirements

Granting write permission of files and directories to nonadministrative users for profile creation or augmentation:

If you are not the user who installed the product, you must have write permission to selected directories within the IBM Business Process Manager installation. The product installer can grant this permission or create a group with permission to create or augment profiles.

The product installer (who can be a administrative or nonadministrative user) can grant write permission to the appropriate IBM Business Process Manager files and directories to nonadministrative users. The nonadministrative users can then create profiles. Alternatively, the product installer can create a group for users who are authorized to create profiles or give individual users the authority to create profiles.

Nonadministrative users create their own profiles to manage their own environments. Typically, they manage environments for development purposes.

Nonadministrative users must store their profiles in their private directory structure, not in the *install_root*\profiles directory of the product.

Restrictions:

- IBM Business Process Manager does not support changing ownership of existing profiles from the product installer to nonadministrative users. A nonadministrative user cannot augment profiles owned by another user.
- Mechanisms within the Profile Management Tool that suggest unique names and port values are disabled for nonadministrative users. The nonadministrative user must change the default field values in the Profile Management Tool for the profile name, node name, cell name, and port assignments. The product installer can assign nonadministrative users a range of values for each of the fields, and assign responsibility to the users for adhering to their assigned value ranges and for maintaining the integrity of their own definitions.

If you already created at least one profile, certain directories and files were created. You can skip the steps in this topic that create these directories and files. If no profile was previously created, you must complete the steps to create the required directories and files.

The following example task shows how to create a group that is authorized to create profiles. The terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager. The installer can perform the following steps to create the profilers group and give the group appropriate permissions to create a profile.

1. Log on to the IBM Business Process Manager system as the product installer. The product installer can be a administrative or nonadministrative user.
2. Using operating system commands, perform the following steps:
   a. Create a group named **profilers**, which will contain all users who can create profiles.
   b. Create a user named **user1**, who can create profiles.
   c. Add users **product_installer** and **user1** to the **profilers** group.

3. Log off and log back on as the installer to pick up the new group.
4. If no profile exists, create the following directories as the installer:
   - Create the *install_root***\logs\manageprofiles** directory by following instructions in the Windows documentation. For this example procedure, the directory is:

     install_root\logs\manageprofiles
   - Create the *install_root***\properties\fsdb** directory by following instructions in the Windows documentation. For this example procedure, the directory is:

     install_root\properties\fsdb
5. If no profile exists, create the profileRegistry.xml file as the installer. For this example, the file path is:

   install_root\properties\profileRegistry.xml

   Add the following information to the profileRegistry.xml file. The file must be encoded as UTF-8.

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <profiles/>
   ```
6. As the product installer, use operating system tools to change directory and file permissions. The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **C:\Program Files\IBM\WebSphere\AppServer**. Follow instructions in the Windows documentation to give the **profilers** group read and write permission to the following directories and their files:

   ```
   @WASHOME\logs\manageprofiles
   @WASHOME\properties
   @WASHOME\properties\fsdb
   @WASHOME\properties\profileRegistry.xml
   ```

   You might have to change the permissions on additional files if the nonadministrative user encounters permission errors. For example, if the product installer authorizes a nonadministrative user to delete a profile, then the product installer might have to delete the following file:

   install_root\properties\profileRegistry.xml_LOCK

   Give write access to the nonadministrative user for the file to authorize the user to delete the file. If the nonadministrative user still cannot delete the profile, then the product installer can delete the profile.

The installer created the **profilers** group and gave the group the correct permissions to the directories and files required for a nonadministrative user to create profiles.

The nonadministrative user that belongs to the **profilers** group can create profiles in a directory that the nonadministrative user owns and to which the nonadministrative user has write permission. However, the nonadministrative user cannot create profiles in the installation root directory of the product.

The administrative user and the nonadministrative user can use the same tasks to manage profiles.

Configuring profiles and databases:

After you install the product, if you did not use typical installation, you must create or augment one or more profiles to define the runtime environment. Before starting a profile, you must have configured the databases that are to be used with the profile.

Configuring a stand-alone environment with a DB2 database server on Windows:

You can configure a stand-alone environment for IBM Business Process Manager using a DB2 database server.

Creating DB2 databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

Creating database design files for DB2:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for stand-alone profiles with DB2:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

       C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option

(2)bpm.advanced.standalone.topology, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
(2)[BPC]       WBI_BPC :  [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = not complete]
(6)[SibME]       WBI_BPC_ME :  [status = not complete]
(7)[SibME]       WBI_CEI_ME :  [status = not complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
(9)[SibME]       WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]       BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]       BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database User name[default=] :
   ```

```
Schema name[default=] :
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server host[default=] :
      Database server port[default=50000] :
      Data source user name[default=] :
      Data source password[default=] :
      DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   --------------------------------------------------------------------------------

   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
   (2)[BPC]        WBI_BPC : [status = complete]
   ```

```
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
(6)[SibME]      WBI_BPC_ME :  [status = complete]
(7)[SibME]      WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.standalone**, after you configure the master component, all database components are listed as complete.

    ```
    [info] Please pick one of the following [database component(s)] :

    (1)[BPM_ProcessServer]  BPM_ProcessServer : [master] [status = complete]
    (2)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
    (3)[SibMe]       BPM_PerformanceDW_ME :  [status = complete]
    (4)[SibMe]       BPM_ProcessServer_ME :  [status = complete]
    (5)[save and exit]

    Please enter the number for the database component :5

    [status] bpm.standard.standalone is complete with 0 remaining item(s):
    ```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.standalone is complete with 0 remaining item(s):

    Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named `dbDesignGenerator.log` is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with DB2 in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:
```
-? , -help
   display help info.
```

```
-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=BPMDB] :
Database User name[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :

[info] Please pick one of the following [Is this database for a Process Center?(s)] :

(1)false
(2)true

Please enter the number for the Is this database for a Process Center? [default=false] :
The user ID you use for administrative security[default=] :
The password for the name specified with the adminUserName parameter[default=] :
Regular pagesize[default=32k] :
Regular TableSpace[default=TWPSSPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=TWPSTEMPSPACE] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :
```

```
(1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-ProcessServer for BPM_ProcessServer
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

• when you use the profile management tool to create a profile
• when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-distributed-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with a DB2 database server:

You can create profiles using the Profile Management Tool or the `manageprofiles` command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your DB2 database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

If you plan to configure the databases on a remote server, you must have created the databases before beginning to create or augment the profile. You can create databases on the local server or use existing databases on a remote server.

Creating Process Center stand-alone profiles with a DB2 database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:
- Log into the Windows system as a local system user to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default

language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: `Vista`   `Windows 7`

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  runas /user:MyAdminName /env pmt.bat

  Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*\bin\ProfileManagement\pmt.bat
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
  7. Advanced: On the Profile Name and Location page, perform the following steps:

a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services

Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **DB2**.

    b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

    c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

e. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 127. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in ${WAS_INSTALL_ROOT}/db2/java.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 50000 or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

• If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

• Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with a DB2 database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

• Log into the Windows system as a local system user to create a profile.

• Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default

language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: **Vista** Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  runas /user:MyAdminName /env pmt.bat

  Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin\ProfileManagement\pmt.bat**

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing

certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root\properties\portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services

Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. On the Process Server Configuration page, set the values for the following parameters.

    • **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    • Environment **Type**: Select how the Process Server is used:

      – Select **Production** if the server is to be used in a production capacity.

      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    • **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    • **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

16. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

        Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.
    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

17. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **DB2**.
    b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.
    c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.
    d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.
    e. Click **Next**.

18. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 128. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in ${WAS_INSTALL_ROOT}/db2/java.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.

Table 128. Required database configuration fields for DB2 Database (continued)

Field	Action needed
Server port	Accept the default value of 50000 or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

19. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

20. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

- Log into the Windows system as a local system user to create a profile.

- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:

   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.

   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/default.procctr
-adminUserName bpmadmin -adminPassword bpmsecret -dbUserId db2user -dbPassword db2secret
-dbType DB2_DATASERVER -procSvrDbName BPMDB -perfDWDbName PDWDB
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with a DB2 database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

- Log into the Windows system as a local system user to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale* *install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: **Vista** **Windows 7**

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  runas /user:MyAdminName /env pmt.bat

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*\bin\ProfileManagement\pmt.bat
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application

Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **DB2**.

   b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

   c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

e. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 129. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in ${WAS_INSTALL_ROOT}/db2/java.
Database server host name (for example IP address)	Accept the default value of localhost or enter the correct database server host name.
Server port	Accept the default value of 50000 or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

11. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

*   If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

*   Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with a DB2 database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

*   Log into the Windows system as a local system user to create a profile.

*   Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default

language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: **Vista**   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

runas /user:MyAdminName /env pmt.bat

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin\ProfileManagement\pmt.bat**
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

- The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
   - **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

   If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **DB2**.

   b. Select **Create a new local database** or **Use an existing local or remote database**. If you select to create a new database, the Profile Management Tool will create a new DB2 database.

   c. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   d. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   e. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 130. Required database configuration fields for DB2 Database

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.
Password for database authentication	Enter a password to authenticate with the database.
Confirm password	Confirm the password.
Directory location of JDBC driver classpath files	The JDBC driver classpath files are packaged with the product and are located in `${WAS_INSTALL_ROOT}/db2/java`.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of `50000` or enter the correct server port number.

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

12. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the `bootstrapProcessServerData` command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

- Log into the Windows system as a local system user to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:

   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring DB2 databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root\profile*\dbscripts\ProcessServer\DB2\ at profile creation time.

2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.

   For example, the following command will connect to the database with the default user ID:

   ```
   db2 connect to databaseName
   ```

   If you log in as **BPMUSER/DB2ADMIN** to the operating system and the datasource for the Process Server database is configured to use **DBUSER** to authenticate, use:

   ```
   db2 connect to databaseName USER DBUSER USING password
   ```

3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

4. Create the table procedures for Process Server.

   From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

   Important: Use **GO** as a delimiting character when executing the stored procedure. For example:

   ```
   db2 -tdGO -vf createProcedure_ProcessServer.sql
   ```

5. Reset the connection. For example:

   ```
   db2 connect reset
   ```

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root\profile*\dbscripts\PerformanceDW\DB2\ at profile creation time.

2. Connect to your database. For example, run **db2 connect to *databaseName***.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the

database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **db2admin**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **db2admin** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.

3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
1. Go to the directory containing the `configBusinessSpaceDB.bat` script. The default directory is `install_root\profile\dbscripts\BusinessSpace\node_name_server_name\DB2\CMNDB`.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.bat

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the `bootstrapProcessServerData` command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the `98database.xml` file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the `Profile_name/config` directory, to make the corrections.

Database passwords must be encrypted.

When you run the `bootstrapProcessServerData` command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   `install_root\profiles/ProcCtr01\bin`

Run the bootstrap utility using the following syntax:
- **bootstrapProcessServerData.bat [-dbJDBCClasspath** *classpath***]**

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the
  dbJBBCClasspath must be surrounded by quotation marks if there are spaces in the path. The default
  location is *WAS_INSTALL_ROOT*\jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or
Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/
directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the
logged information.

Bootstrap data onto the default stand-alone profile server:

bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:

bootstrapProcessServerData -dbJDBCClasspath c:\DB2\java

Configuring a stand-alone environment with a DB2 for z/OS database server on Windows:

You can configure a stand-alone environment for IBM Business Process Manager using a DB2 Universal
Database for z/OS database server.

Creating database design files and database scripts (Windows stand-alone):

Use the database design tool to generate a design file that is used when creating a stand-alone profile.
The database design tool also generates database scripts that you can use to create your database tables.

Creating database design files and database scripts for stand-alone profiles with DB2 for z/OS:

Use the database design tool to generate a design file that is used when creating a stand-alone profile.
The database design tool also generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only
from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that
  describes the general purpose of the database configuration, supplied by the database administrator or
  solution architect. Alternatively, it might be a description of required parameters and properties. This
  information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the
  database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship
  between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database
  design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values
and save them to a new database design file or to an existing file. You can optionally generate database
scripts that can be used to create the database objects for your database type. When you run the tool, the
available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory `C:\tmp\DB2-zOS\W1MYDB`. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as `C:\tmp\DB2-zOS\W8CELLDB`. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as `C:\tmp\DB2-zOS\W8S1DB`. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

  1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

     C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

     Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
     When the database design tool launches successfully, you see information similar to the following example:

     ```
     [info] running DbDesignGenerator in interactive mode...

     [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
     help at any time.
     [info] To accept the given default values, simply press the 'Enter' key.
     ```

```
[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

    You are prompted to choose a database pattern, as shown in the following example:

    ```
    [info] Please pick one of the following [database pattern(s)] :

    (1)bpm.advanced.nd.topology
    (2)bpm.advanced.standalone
    (3)bpm.standard.nd
    (4)bpm.standard.standalone
    (5)wesb.nd.topology
    (6)wesb.standalone
    ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

    For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

    ```
    [info] Please edit any database component with status of 'not complete' for required properties.
    [info] Completed database components can be edited to change existing or defaulted property values.
    [info] Design the 'master' component first, and then any parent components,
    since other components may inherit values from them.

    [info] Please pick one of the following [database component(s)] :

    (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
    (2)[BPC]         WBI_BPC :  [status = not complete]
    (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
    (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
    (5)[BSpace]      WBI_BSPACE :  [status = not complete]
    (6)[SibME]       WBI_BPC_ME :  [status = not complete]
    (7)[SibME]       WBI_CEI_ME :  [status = not complete]
    (8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
    (9)[SibME]       WBI_SCA_SYS_ME :  [status = not complete]
    (10)[SibMe]       BPM_PerformanceDW_ME :  [status = not complete]
    (11)[SibMe]       BPM_ProcessServer_ME :  [status = not complete]
    (12)[save and exit]
    ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

    For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

    ```
    [status] WBI_CommonDB is not complete with 1 remaining item(s):
    [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

    Edit this database component? (y/n) [default=y] :
    ```

5. To edit the database configuration for the component, type y and press Enter.

    You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```
6. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:
   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```
7. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:
   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Data source user name[default=] :
   Database schema name (SQLID)[default=] :
   Bufferpool of 4K size for tables[default=BP1] :
   Bufferpool for indexes[default=BP2] :
   Bufferpool of 4K size for LOB data[default=BP3] :
   Bufferpool of 8K size for tables[default=BP8K1] :
   Bufferpool of 16K size for tables[default=BP16K1] :
   Bufferpool of 32K size for tables[default=BP32K1] :
   Storage group name[default=] :
   ```
8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:
   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```
9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:
   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
   (2)DB2 Universal JDBC Driver Provider on local z/OS
   ```
   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote**

z/OS as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. For any database components that are listed as a parent to another component, configure the parent before the other components because the information provided will be used as default settings for the database component listing the parent. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

Note: For DB2 for z/OS, you must configure each of the remaining components. The following guidelines apply:

- Ensure that you specify the appropriate schema name for each of the remaining database components. Typically, the Process Server, Performance Data Warehouse, and messaging engine components require unique schema names; the remaining components can be assigned the same

schema name. You might also be prompted for other values that are unique to the type of component being configured; for example, a prefix for table space names or a value for VSAM catalog names (VCAT).

- If you intend to use a single database for all the system integration bus messaging engines, specify unique prefixes for their table space names because these prefixes will be used to keep the table space name of each messaging engine unique within the database.

- As you configure each component, verify that the values inherited from the master component are appropriate, and amend as required. For example, if you are planning to use more than one database, you might want to amend the database name to reflect the planned distribution of database objects across the DB2 for z/OS subsystem.

- When configuring the Process Server component (**BPM_ProcessServer**), you are asked to specify whether the database is for a Process Center or Process Server:

  ```
  [info] Please pick one of the following [Is this database for a Process Center?(s)] :

  (1)false
  (2)true
  ```

  If you want to create a Process Center profile or cluster in a network deployment environment, you must choose the **true** option. If you set the option to **false**, you will not be able to access the Process Center console.

  If the database is for a Process Server, you must choose the **false** option.

If you selected **bpm.advanced.standalone**, after you configure the master component, you must manually configure the **BPM_PerformanceDW** and **BPM_ProcessServer** components. Also edit the configuration values of the remaining components to ensure that the configuration is appropriate for each of the databases you want to create.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]       WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :12

[status] bpm.advanced.standalone.topology is not complete with 6 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'catalog' for VCAT is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 4 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.
[ 5 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 6 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'catalog' for VCAT is empty.
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.standalone is complete with 0 remaining item(s):

Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. To generate the database scripts for each component in the directory that you specified earlier, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories. Each of the directories also contains a **createDB2.sh** script, which you can later run together with the database scripts to create the database objects.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files and database scripts for a specific component with DB2 for z/OS in a stand-alone environment:

You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.

– The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

    C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

    Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
    When the database design tool launches successfully, you see information similar to the following example:

    ```
    [info] running DbDesignGenerator in interactive mode...

    [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
    help at any time.
    [info] To accept the given default values, simply press the 'Enter' key.

    [info] Please pick one of the following [design option(s)] :

    (1)Create a database design for Standalone profile or Deployment Environment
    (2)Create a database design for a single component
    (3)Edit an existing database design
    ```

```
     (4)Generate database scripts from a database design
     (5)exit [q]

     Please enter the number for the design option :
```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and
   press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the
   appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select
   option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can
   generate, and which you can use to create your database objects. If you choose to generate SQL
   scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified
   directory path where you want to collate all the SQL scripts for a specific database; for example,
   WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB. Then press Enter. If you have not yet
   created the directory in your file system, the database design tool automatically creates it when the
   SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite
   its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file
   is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database
   properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you
   see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=BPMDB] :
   Data source user name[default=] :
   Database schema name (SQLID)[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   ```

```
The password for the name specified with the adminUserName parameter[default=] :
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.
   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

   After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
        Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```
9. Press Enter to accept the default file name, or type another file name and then press Enter. After you
   enter the file name, you see information similar to the following example:
```
generate database scripts? (y/n) [default=y] :
```
10. To generate database scripts based on the information provided to the database design tool, type y
    and press Enter. You see information similar to the following example:
```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/ProcessServer for BPM_ProcessServer
```
```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you
specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be
used to create the database tables. The generated database design file includes only values for this
configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Related tasks:

"Creating the messaging engine data stores" on page 1214
If the messaging engine data stores have not already been created, use the database design tool to
generate the database scripts that the database administrator will use to create the tables for the
messaging engine data stores.

Generating scripts for creating database objects in DB2 for z/OS:

From an installation of IBM Business Process Manager, you can generate database scripts for creating IBM
Business Process Manager database objects in a DB2 for z/OS database subsystem. You can use the
database design tool to generate the scripts.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only
from the installation binary files.

Prepare the following information, which provides input to the database scripts that you plan to
generate:

- Information about how IBM Business Process Manager and its components are installed.
- Information about the database configuration that you are designing for the DB2 for z/OS subsystem.
  This information can be supplied by the database administrator or solution architect, and can include
  details about the required parameters and properties; for example:
  - Database server details
  - Data source details
  - Location of the JDBC driver on the system where the server profile will be created
  - User ID and password for authenticating to the database
- Information about the topology pattern to be implemented, and an understanding of how the database
  design fits into the pattern that you plan to use.

To generate the database scripts for creating your database objects, you can run the database design tool
in silent mode with the **-g** command-line parameter. In this mode, the tool requires input from a database
design file that defines the configuration for your DB2 for z/OS database. The database design file must
already exist before you generate the database scripts. You can generate the database design file by
running the database design tool in interactive mode, or by using a configuration planning spreadsheet:

- You can run the database design tool in interactive mode to generate a database design file. Follow the prompts in the tool to define a DB2 for z/OS database configuration for your stand-alone or network deployment topology.
- The configuration planning spreadsheet is a supplementary artifact that can be downloaded from the IBM Support Portal. The spreadsheet is primarily intended for use with IBM Business Process Manager for z/OS, but can be tailored for use with IBM Business Process Manager on Linux on System z. The configuration planning spreadsheet consists of a number of worksheets that use color coding and comments to assist with data entry, and to help you establish naming conventions. The spreadsheet also includes macros that you can use to generate a database design file, among other files. Before using the spreadsheet, run the database design tool in interactive mode to become familiar with the required configuration options for each of the components.

  You can download the Microsoft Excel spreadsheet from Techdoc WP102075. The data that you require to complete the spreadsheet can span multiple roles, such as systems programmer, product administrator, and database administrator. Therefore, it is advisable to review the spreadsheet in detail and then work with the relevant personnel to establish naming conventions and to complete the entries. After completing the entries, use the **Save** button on the DataBase Design File worksheet to generate the database design file.

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory `C:\tmp\DB2-zOS\W1MYDB`. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as `C:\tmp\DB2-zOS\W8CELLDB`. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as `C:\tmp\DB2-zOS\W8S1DB`. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. If necessary, copy the database design file, which defines your DB2 for z/OS configuration, to the workstation where IBM Business Process Manager is installed, to make the file available for use with the **DbDesignGenerator** command.
2. From the command line, change to the IBM Business Process Manager directory where the **DbDesignGenerator** command is stored:

   cd *install_root*\util\dbUtils

   For example: cd C:\IBM\WebSphere\AppServer\util\dbUtils
3. Run the **DbDesignGenerator** command using the following syntax:

   DbDesignGenerator.bat **-g** *db_design_file*

   where *db_design_file* is the fully qualified name of the database design file. For example:

   DbDesignGenerator.bat **-g** C:\tmp\DB2-zOS\W8CELL.nd.dbDesign
4. Review the information that is displayed on the screen, checking that no error messages are displayed. For each database component, the database design tool writes information messages to the

screen to indicate that the scripts were generated in the directory specified in the database design file. For example, for the Common database component, you see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

Tip: In the database design file, the directories for the SQL scripts are defined by the *ddl_outDir* variable in each component section. If you want to generate the SQL scripts to a set of different directories, a quick way to do this is to manually update the values of the *ddl_outDir* variables. Then save the database design file, and run the **DbDesignGenerator** command again.

1. Check the specified directory locations to see the database scripts that were generated. Each directory additionally includes a **createDB2.sh** script that you can use to run the SQL.

   To use these scripts to create the IBM Business Process Manager database objects in the DB2 for z/OS subsystem, you must first transfer the scripts to the z/OS system.

2. Use FTP to transfer all the generated database scripts to the z/OS system that contains the installation of DB2. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.

3. Run the **createDB2.sh** script from the z/OS UNIX System Services command environment to create the DB2 for z/OS database objects.

   Note: The **createDB2.sh** script requires execute permissions.

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-zOS-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with a DB2 for z/OS database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Creating Process Center stand-alone profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista**   Windows 7
- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.
1. Use one of the following methods to start the Profile Management Tool.
    - Start the tool from the First steps console.
    - Run the command *install_root***bin****ProfileManagement****pmt.bat**
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

    The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.
5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root\properties\portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is Manual). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.

    d. Click **Next**. The design file location is passed to the command line to complete the database configuration.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar`

Restrictions: **Vista** **Windows 7**
- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

`runas /user:MyAdminName /env pmt.bat`

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*\bin\ProfileManagement\pmt.bat
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.
5. On the Profile Creation Options page, choose **Advanced** and click **Next**.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
7. Advanced: On the Profile Name and Location page, perform the following steps:

a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root\profiles\profile_name`.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default.

The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root\properties\portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID

must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services

> Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. On the Process Server Configuration page, set the values for the following parameters.

    • **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    • Environment **Type**: Select how the Process Server is used:

        – Select **Production** if the server is to be used in a production capacity.

        – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

        – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    • **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    • **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

   You can click **Test Connection** to check the connection to the Process Center.

16. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.

       With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.
    d. Click **Next**. The design file location is passed to the command line to complete the database configuration.
17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.
- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:
   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.
2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.
3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/default.procctr
-adminUserName bpmadmin -adminPassword bpmsecret -dbUserId db2user -dbPassword db2secret
-dbType DB2_DATASERVER -procSvrDbName BPMDB -perfDWDbName PDWDB
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with a DB2 for z/OS database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: | **Vista** | | Windows 7 |

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***\bin\ProfileManagement\pmt.bat**
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. Advanced: Configure the databases using a design file.

a. Select **Use a database design file**.

b. Click **Browse**.

c. Specify the fully qualified path name for the design file.

  With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.

d. Click **Next**. The design file location is passed to the command line to complete the database configuration.

9. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

10. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with a DB2 for z/OS database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar`

Restrictions: `Vista` `Windows 7`

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

`runas /user:MyAdminName /env pmt.bat`

  Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin****ProfileManagement****pmt.bat**
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.
8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

9. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.

       With a DB2 for z/OS database, you cannot run the database scripts automatically as part of the profile creation process.
    d. Click **Next**. The design file location is passed to the command line to complete the database configuration.
10. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
11. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:

- default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
- default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:
   ```
   manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/default.procctr
   -profileName MyProfileName
   ```
   If you have created a response file, specify the **-response** parameter without any other parameters. For example:
   ```
   manageprofiles.bat -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS databases, and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating and configuring DB2 for z/OS databases after stand-alone profile creation:

After creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

DB2 for z/OS authorization prerequisites:

Before you create the IBM Business Process Manager databases, you must ensure that the required authorizations are granted for your DB2 for z/OS version. Also ensure that the appropriate storage groups and buffer pools are assigned, and configure clustering if necessary.

User authorization requirements for DB2 for z/OS

Ask your DB2 for z/OS system administrator to check the authorizations that have been granted to ensure that you have not granted more authority than necessary to any user ID. It can be tempting to grant DB2 SYSADM authority to the JCA authentication aliases in order to avoid possible problems with DB2 security during the configuration. The WebSphere administrator ID should not require more than DBADM authority to define the IBM Business Process Manager databases.

The following storage group, database, and buffer pool GRANT permissions are provided by default, for the WebSphere administrator identified as *#DB_USER#*. These permissions are available in the `createDatabase.sql` database script that is generated by the database design tool:

```
GRANT USE OF STOGROUP #STOGRP# TO #DB_USER# WITH GRANT OPTION;
GRANT DBADM ON DATABASE #DB_NAME# TO #DB_USER#;
GRANT USE OF ALL BUFFERPOOLS TO #DB_USER#;
```

The following GRANT permission might be required to permit the *#DB_USER#* user to create sequences and stored procedures with a schema qualifier of *#SCHEMA#*:

```
GRANT CREATEIN,ALTERIN,DROPIN ON SCHEMA #SCHEMA# TO #DB_USER# WITH GRANT OPTION;
```

The following permissions are also required:

```
GRANT CREATE ON COLLECTION #SCHEMA# TO #DB_USER#;
GRANT BINDADD TO #DB_USER#;
```

Authorization requirements for views on DB2 for z/OS V10

If you are planning to use DB2 for z/OS V10, additional permissions are required for views in the database:

- Before you run the SQL to define views, you might need to set the DBACRVW subsystem parameter to YES.

  This setting ensures that WebSphere administrator IDs with DBADM authority on database *#DB_NAME#* can create views for other user IDs.

- On DB2 for z/OS V10, the WebSphere administrator ID must be specifically granted access to views, because access is not implicitly granted to users with DBADM authority on the database. Individual GRANT statements or a Resource Access Control Facility (RACF) group can be used to provide access to views in DB2 for z/OS V10. Ask your DB2 for z/OS administrator to provide this access by using either of the following methods:

  - Issue an explicit GRANT statement for each view. For example, the following sample GRANT statements can be issued for user ID WSADMIN:

    ```
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_SERVICE TO WSADMIN WITH GRANT OPTION;
    ```

```
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.APPLICATION_COMP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG_B TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY_LDESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.EVENT TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.MIGRATION_FRONT TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_INSTANCE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPLATE TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPL_ATTR TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROPERTY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROP_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.SHARED_WORK_ITEM TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_HISTORY TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_DIST_TARGET TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_LDESC TO WSADMIN WITH GRANT OPTION;
GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_ITEM TO WSADMIN WITH GRANT OPTION;
```

– Define a RACF group that corresponds to the schema name for the views, and connect the WebSphere administrator ID to the RACF group. For example, you can define a RACF group named S1CELL, and connect user WSADMIN to it, as follows:

```
INFORMATION FOR GROUP S1CELL
 SUPERIOR GROUP=ZWPS    OWNER=ZWPS    CREATED=07.144
 INSTALLATION DATA=OWNED BY EMP SERIAL 009179, SITE ABCUK
 NO MODEL DATA SET
 TERMUACC
 NO SUBGROUPS
 USER(S)= ACCESS= ACCESS COUNT= UNIVERSAL ACCESS=
   WSADMIN   CONNECT   000000     NONE
    CONNECT ATTRIBUTES=NONE
    REVOKE DATE=NONE     RESUME DATE=NONE
```

Using the configuration planning spreadsheet to define authorizations

If you have downloaded the configuration planning spreadsheet for use, you can alternatively use this spreadsheet to generate the GRANT permissions that are required for users and for DB2 for z/OS V10 views (as identified in the preceding sections in this topic). The configuration planning spreadsheet is available from Techdoc WP102075 in the IBM Support Portal.

The Database worksheet in the spreadsheet lists a set of sample SQL statements that can be used to create the databases and storage groups. Additionally, the GRANT permissions that are required to authorize the WebSphere administrator and to provide access to DB2 for z/OS V10 database tables are provided. When you specify the user and database object names on the BPMVariables worksheet of the spreadsheet, these values are propagated to the Database worksheet, and are used to complete the CREATE and GRANT statements with the appropriate values.

Ask your DB2 for z/OS system administrator to use the relevant CREATE statements to create the databases and storage groups, and to use the GRANT statements to authorize the WebSphere

administrator. For more information about using the artifacts generated from the spreadsheet, see the accompanying PDF document in the Techdoc.

Storage group assignments and buffer pool usage

Ask your DB2 for z/OS system administrator to check the storage group assignments and buffer pool usage. Incorrect storage group assignment and buffer pool usage might not show up as an error message in a log, but might cause problems later. It is better to resolve such problems now rather than when the system has been handed over for use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.

Clustering requirements

If you intend to configure clustering, your DB2 for z/OS system must be running in data-sharing mode.

Related tasks:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

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Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating databases in the DB2 for z/OS subsystem:

When you use the database design tool (**DbDesignGenerator**) to define your database configuration, you can generate the database scripts that are required for creating the databases for the IBM Business Process Manager components.

You can use various tools to run these database scripts:

- When you run the database design tool to generate the database scripts, the **createDB2.sh** script is also generated. You can use **createDB2.sh** to run the database scripts.
- You can use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to run the database scripts.

Choosing which tool to use

You can choose one tool over another based on experience and familiarity, or personal preference. Your organization might also have implemented standards or conventions for the tools used to create DB2 for z/OS objects, particularly in a production environment.

Considerations for choosing the createDB2.sh script
- **createDB2.sh** can create all your database objects in one simple execution of the tool, so it is a good choice if this is your first server implementation.
- **createDB2.sh** runs the database scripts that the database design tool (**DbDesignGenerator**) generates.
- **createDB2.sh** runs the SQL for each component in the correct sequence.
- **createDB2.sh** creates database objects according to a naming convention that you define.
- **createDB2.sh** organizes the layout of database objects across DB2 for z/OS databases.
- **createDB2.sh** issues GRANT permissions to database, storage group, and buffer pool objects.
- **createDB2.sh** automatically completes customization of the service integration bus Data Definition Language (DDL).
- **createDB2.sh** runs in a UNIX System Services environment.
- **createDB2.sh** produces an audit trail of the objects that it creates.

Considerations for choosing other tools
- You might prefer to use the DB2 command line processor to run the SQL statements in the UNIX Systems Services environment. You must first run the **createDB2.sh** script in a mode that bypasses execution of the SQL statements and instead consolidates them into two `.sql` files. You can then run these files by using the command line processor.
- There is no restriction on the naming or organization conventions that apply to the database objects other than the standard database subsystem restrictions.
- Some tools can be run from a z/OS environment.
- The tools can produce an audit trail of the DB2 database commands that have been issued.

Related tasks:
"Creating database design files and database scripts (Windows stand-alone)" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

Configuring the DB2 command line processor:

Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

Ensure that a properties file, for example, `clp.properties`, exists for the DB2 command line processor. If required, you can create your own properties file by using the sample properties file that is available in the directory where the command line processor is installed. For more information, see your DB2 for z/OS documentation.

Complete the following configuration steps in the z/OS UNIX System Services environment from which the **createDB2.sh** script will be run:

1. Configure the DB2 command line processor for each user ID that will work with DB2 for z/OS from the command line. You can update the personal or shared user profiles as follows:
   - Modify the CLASSPATH environment variable to include the `clp.jar` file.
   - Use the CLPPROPERTIESFILE environment variable to define the fully qualified name of the properties file for the command line processor.
   - Define the **db2** command as an alias for the command that starts the command line processor.
   - Specify the `DB2JccConfiguration.properties` file that defines the JDBC properties to be applied to the command line processor.

   You can use the following syntax to add the required entries to the `.profile` or `/etc/profile` file:

   ```
   export CLPHOME=clp_install_dir
   export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
   export CLPPROPERTIESFILE=clp_properties_file_path
   alias db2="java -Ddb2.jcc.propertiesFile=
   /file_path/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
   ```

   For example:

   ```
   export CLPHOME=/shared/db2910_base
   export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
   export CLPPROPERTIESFILE=/wasv8config/clp.properties
   alias db2="java -Ddb2.jcc.propertiesFile=
   /wasv8config/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
   ```

2. In the properties file for the command line processor, define alias names that can be used to connect to the DB2 for z/OS server. An alias name definition includes the following entities:
   - A URL that specifies the domain name or IP address of the database server, the port on which the server listens, the DB2 location name defined during installation, and the property for the JDBC connection. The URL can take the form: *server:port/database* property=*value*. The port and property values are optional, and the DB2 location name must be specified in uppercase characters.
   - A user ID and an associated password that can be used to connect to the DB2 server. This user ID should correspond to the user ID (with SYSADM authority) that the DB2 system administrator uses to run the **createDB2.sh** script.

   You can add the required alias name entries to the properties file by using the following syntax:

   ```
   DB2ALIASNAME=URL,user_ID,password
   ```

   For example:

   ```
   DSNXWBD=localhost:9446/DSNXWBD,SYSADM1,SYSPWRD1
   ```

   Tip: When you define a *DB2ALIASNAME* value in the properties file, ensure that the correct connection details are specified to avoid connecting to the wrong database and inadvertently overwriting its contents.

3. Configure the DB2 DBACRVW subsystem parameter to enable user IDs with DBADM authority on a database to perform the following tasks for other user IDs: create views on tables in the database, create aliases for tables, and create materialized query tables. You can use the installation Command List (CLIST) to access the DSNTIPP ISPF panel and update the DBADM CREATE AUTH field to set DB2 ZPARM DBACRVW=YES.

Use the **createDB2.sh** script to either run the SQL to create the database objects for a specified database, or to consolidate the SQL statements into two `.sql` files that you can run later using other database tools.

Related tasks:

"Creating DB2 for z/OS database objects using the createDB2.sh script"
After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 1211
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating DB2 for z/OS database objects using the createDB2.sh script:

After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

You can also use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to create and populate databases.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

The number of databases that you create for your IBM Business Process Manager installation can depend on your topology, and how you want to distribute your database objects across the DB2 for z/OS subsystem. Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created. For example:

- To create a single database, you can run **createDB2.sh** once from a directory that contains all the database scripts that were generated for all the IBM Business Process Manager components.
- To create multiple databases at the cell level and cluster levels, you can run **createDB2.sh** once from each directory that contains the database scripts required to create the database objects for the cell and clusters.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   `cd /u/work/S4CELLDB`

2. Run the **createDB2.sh** script by using the following syntax:

   `createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate -DBVCat volume_catalog -DBUser DB_user_ID -RunSQL`

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
   Specifies the name of the database to be created.

   -DBSto
   Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
   Creates the database.

   -DBVCat
   Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

   -DBUser
   Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

   -RunSQL
   Runs the SQL statements that create the database objects.

   For example:

   `createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP -DBUser S4ADMIN -RunSQL`

   For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

3. Review the messages that are displayed in the console, checking that no error messages are displayed.

   Tip: The first time that you run **createDB2.sh** to create the database, you see a few messages because the script first attempts to drop the database, which at that stage does not yet exist. These messages can be ignored, and subsequent invocations of **createDB2.sh** for the same database will not produce such messages.

   When the script has finished running, you can also review the z_output.txt file, which provides an audit trail of the operations completed and status messages. This file is stored in the directory from which you ran the **createDB2.sh** script.

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 1207
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining
a set of environment variables and a **db2** command alias. You must also define alias names that can be
used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Windows stand-alone)" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile.
The database design tool also generates database scripts that you can use to create your database tables.

Creating DB2 for z/OS database objects using the DB2 command line processor:

When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the
database objects for the specified database, or you can bypass execution of the SQL scripts so that you
can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL
statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2
command line processor.

You can also run these .sql files by using any other database tool of your choice, such as SPUFI or
DSNTEP2.

* Decide on the DB2 for z/OS database design and configuration, including the number of databases
  required for the IBM Business Process Manager components. For example, in a stand-alone server
  environment, you might decide to set up all the component databases in a single DB2 for z/OS
  database.
* Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups,
  VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
* Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
* Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to
  create the database objects for the IBM Business Process Manager components. Set up your database
  configuration so that the database design tool creates a single output directory for each database to be
  created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are
  required to create the database, into that directory.
* Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that
  contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and
  transfer the database schema files in binary mode. Also ensure that you retain the directory structure
  when you transfer the files.
* Grant execute permissions to the **createDB2.sh** script.
* Create or augment the profile.
* Configure the DB2 command line processor.

Provided that the database scripts are grouped appropriately in the output directories that were specified
when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a
database to be created.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script
with a user ID that has SYSADM authority, to create the databases and storage groups. On completion,
the system administrator can then grant DBADM authority for the IBM Business Process Manager
databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command
   shell and then change to the directory to which you transferred the database scripts for the database
   objects to be created. For example:

   cd /u/work/S4CELLDB

2. Run the **createDB2.sh** script by using the following syntax:

```
createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate
-DBVCat volume_catalog -DBUser DB_user_ID
```

where:

-DBAlias
  Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

-DBName
  Specifies the name of the database to be created.

-DBSto
  Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

-DBCreate
  Creates the database.

-DBVCat
  Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser
  Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

Tip: By omitting the **-RunSQL** parameter, you bypass the execution of the SQL statements that create the database objects, and instead consolidate the statements into two .sql files.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

The z_schema.sql and z_schemaProc.sql files, which hold the consolidated SQL statements, are generated in the directory from which you ran the **createDB2.sh** script. The z_schemaProc.sql file contains SQL statements for stored procedures, and is generated in addition to z_schema.sql because stored procedures require the "at" sign (@) as a statement termination character when running the command line processor.

3. Run the DB2 command line processor in batch mode to execute the SQL in the z_schema.sql file:

```
db2 -f /createDB2.sh_path/z_schema.sql
```

For example:

```
db2 -f /u/work/S4CELLDB/z_schema.sql
```
The command line processor reads the data in the file, and processes the commands in the file consecutively.

4. Run the DB2 command line processor again to execute the SQL in the z_schemaProc.sql file, and additionally use the **-td** parameter to define @ as the statement termination character:

```
db2 -td@ -f /createDB2.sh_path/z_schemaProc.sql
```

For example:

```
db2 -td@ -f /u/work/S4CELLDB/z_schemaProc.sql
```

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 1207
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Windows stand-alone)" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

Creating DB2 for z/OS database objects using SPUFI or DSNTEP2:

You can use tools such as SPUFI or DSNTEP2 to run the database scripts that are used to create the DB2 for z/OS database objects for your configuration.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.

- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.

- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.

- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, which are required to create the database, into that directory.

  Tip: The generated scripts that you use to create the database objects can either be in ASCII or EBCDIC format. Typically, the generated .sql files are in ASCII format, and the equivalent .ddl files are in EBCDIC format.

- Use FTP to transfer the database scripts to the z/OS system that contains the DB2 for z/OS installation.

- Create or augment the profile.

You can create the database objects by using the tool of your choice. For example:

SPUFI A utility that runs SQL scripts from z/OS. SPUFI uses EBCDIC input.

DSNTEP2
    A sample dynamic SQL program provided with the DB2 for z/OS product.

1. Assign the appropriate read permissions to the SQL scripts; for example:

   ```
   chmod 644 createTable_AppScheduler.sql
   ```

2. If the tool that you want to use to view, edit, and run the scripts requires the scripts to be in EBCDIC format, rather than ASCII format, use the **iconv** command to convert the files to EBCDIC. For example:

   ```
   iconv -t IBM-1047 -f ISO8859-1 createTable_AppScheduler.sql >
   createTable_AppScheduler_EBCDIC.sql
   ```

   Important: After converting from ASCII to EBCDIC, check that no SQL statements exceed 71 characters in length. Longer lines will lead to line truncation and invalid statements when copying to fixed-width MVS data sets.

   Tip: If you have converted the files from ASCII format to EBCDIC, but need to run the files in ASCII format, you can also use **iconv** to convert the files back to ASCII. For example:

```
iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >
createTable_AppScheduler.sql
```

3. Edit the values in the `createDatabase.sql` and `dropDatabase.sql` files according to your requirements. The following symbolic variables need to be updated:

```
@STOGRP@    = DB2 Storage group name
@DB_NAME@   = DB2 Database name
@SCHEMA@    = DB2 SQLID (Schema Qualifier)
@BPTABLE4K@ = Buffer Pool of 4k Size
@BPINDEX@   = Buffer Pool Index
@VOLUMES@   = DB2 comma separated list of volume-ids
@VCAT@      = DB2 integrated catalog facility name
@DB_USER@   = The user ID which will be used to create the database objects
```

4. To create database objects outside of the z/OS UNIX environment by using SPUFI or DSNTEP2, copy the customized database scripts from z/OS UNIX to a partitioned data set.

5. Run the customized scripts by using the tool of your choice.

   Tip: If you previously ran the **createDB2.sh** script and chose to bypass execution of the SQL scripts, you can also run the consolidated SQL files (`z_schema.sql` and `z_schemaProc.sql`), which were generated.

6. Verify that the database tables are created successfully with no errors by inspecting the output.

Related tasks:

"Creating database design files and database scripts (Windows stand-alone)" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 1211
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (`z_schema.sql` and `z_schemaProc.sql`) that you can run later by using the DB2 command line processor.

Creating the messaging engine data stores:

If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

You must create and populate a messaging engine data source for each of the following components that you configure:

- Service Component Architecture system bus
- Service Component Architecture application bus
- Process Server
- Performance Data Warehouse
- Common Event Infrastructure

You can create all the database objects in one or more databases in the DB2 for z/OS subsystem. Take note of the following considerations:

- All messaging engines use the same table names. Therefore, the tables for each messaging engine require a unique schema qualifier.
- When you use the database design tool to define the database configuration for each messaging engine, you can specify a prefix for table space names:
  - If you intend to use a single database for all the messaging engines, specify a unique table space prefix for each messaging engine to make its table space name unique within the database.

- If you intend to use a separate database for each messaging engine, the table space prefixes that you specify for the messaging engines can be identical or unique.

1. For each messaging engine, complete the following steps to generate the required database scripts:

   a. Run the database design tool (**DbDesignGenerator**) from the *install_root*/util/dbUtils directory.

   b. Select option **(2)Create a database design for a single component**, and then select the appropriate option for the messaging engine.

   c. Complete the remaining prompts in the tool to define the database configuration and to generate the scripts.

   Tip: As an alternative to running the database design tool multiple times to generate scripts for each of the messaging engines, you can run the tool once using option **(1)Create a database design for Standalone profile or Deployment Environment**. With this option, you can define the database configuration and generate database scripts for the following components in a single pass through the tool: Common database, Business Process Choreographer, Performance Data Warehouse, Process Server, Business Space, and the six messaging engines.

2. Run the generated DDL scripts using the tool of your choice.

The messaging engine data stores are created.

Related tasks:

"Creating database design files and database scripts for a specific component with DB2 for z/OS in a stand-alone environment" on page 1182
You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

"Creating database design files and database scripts for stand-alone profiles with DB2 for z/OS" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

Granting table privileges to the JCA authentication alias user ID:

If the schema name you are using is not the same as the JCA authentication alias user ID, you must grant a subset of DB2 for z/OS privileges to the JCA authentication alias user ID.

The database scripts for the service integration bus (SIB) contain commented GRANT commands that you can use as a basis for granting access to the SIB tables. However, the other IBM Business Process Manager components do not supply GRANT statements.

Use a schema name that is different from the JCA authentication alias to prevent the alias user ID from having the authority to drop tables. (The authority to drop tables is implicitly granted to the creator, that is, the schema.) Note that it does not make sense to grant a privilege like DBADM to the JCA authentication alias user ID because DBADM also has the ability to drop tables.

If you want IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the database scripts and editing them to construct GRANT commands from the CREATE commands. You can create GRANT commands like the one shown in the following example:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

where *userid/sqlid* is the JCA authentication alias user ID.

Note: Typically, the creator of a database object has implicit use of that object without requiring additional GRANT permissions. However, for DB2 for z/OS Version 10, additional GRANT permissions might be required for views because access to views is not implicitly granted to the creator.

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

    install_root\profiles/ProcCtr01\bin

Run the bootstrap utility using the following syntax:

* **bootstrapProcessServerData.bat [-dbJDBCClasspath** *classpath***]**

where:

* **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*\jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:
bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:
bootstrapProcessServerData -dbJDBCClasspath *JDBC_DRIVER_PATH*

Setting the correct schema name for the messaging engines:

To ensure that the service integration bus (SIB) messaging engines can access the appropriate DB2 for z/OS tables, the correct schema name must be set for the messaging engines. You can use the administrative console to change the schema names.

Start the server.
1. Log in to the administrative console.
2. Navigate to **Service Integration** > **Buses**.
3. For each messaging engine:

a. Select **Messaging engines**, and then click the name that is displayed.

b. Click **Message store**.

c. Change the value of **Schema name** to the name used when creating the DB2 for z/OS tables for this messaging engine.

d. Click **Apply**.

e. Save your configuration changes.

4. Verify that the messaging engines can be started:

a. Log out of the administrative console.

b. Stop, and then restart the server.

c. Look in the output of the server log for successful SIB messaging engine startup messages. For example:

```
BBO00222I: "BusName"
CWSID0016I: Messaging engine MessagingEngineName is in state Started.
```

Configuring a stand-alone environment with an Oracle database server on Windows:

You can configure a stand-alone environment for IBM Business Process Manager using an Oracle database server.

Setting up Oracle databases:

You or your database administrator (DBA) can configure the Process Server database, Performance Data Warehouse database, and Common database before, after, or during creating or augmenting a profile.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

You have the following options for creating and configuring the databases:

- You or your DBA creates the databases in advance and the Profile Management Tool configures them for you during profile creation or augmentation.
- You or your DBA creates a database design file using the database design tool, and you pass the file to the Profile Management Tool or **manageprofiles** command-line utility during profile creation or augmentation.
- You postpone the database configuration, and you or your DBA creates the required databases and database tables afterwards by running the scripts that are generated during profile creation or augmentation.

Creating database design files for Oracle:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for stand-alone profiles with Oracle:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   ```

```
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]        WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = not complete]
   (6)[SibME]      WBI_BPC_ME :  [status = not complete]
   (7)[SibME]      WBI_CEI_ME :  [status = not complete]
   (8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool

is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name(SID) [default=CMNDB] :
Database User name[default=] :
Database schema [default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
Database Location(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :
```

```
(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):


--------------------------------------------------------------------------------


[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

If you selected **bpm.advanced.standalone**, you must manually configure the **BPM_PerformanceDW**, **BPM_ProcessServer**, and the corresponding **SibMe** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
```

```
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :3
-------------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :4
-------------------------------------------------------------------------------------

[status] BPM_ProcessServer is not complete with 3 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'databaseUser' for DB_USER is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
required property 'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.

Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.standalone is complete with 0 remaining item(s):

Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\Oracle-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with Oracle in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message `The system cannot find the specified path.` you might have entered the path name incorrectly. Re-enter the path.

   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   ```

```
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name(SID) [default=BPMDB] :
   Database User name[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\Oracle-ProcessServer for BPM_ProcessServer

[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v Oracle-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with an Oracle database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your Oracle database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

To configure the database information while creating or augmenting the profile, you must know the service name for your Oracle instance.

1. Create a table space.

   ```
   SQL> CREATE TABLESPACE [tablespace_name] DATAFILE '[datafile_name]' SIZE 50M AUTOEXTEND ON NEXT 10M
   MAXSIZE UNLIMITED LOGGING;
   ```

2. Create the users. You will specify these users on the Database Configuration - Part 2 page in the Profile Management Tool. The following example assumes you create a BPMDBA user name for the Process Server database, a PDWDBA user name for the Performance Data Warehouse database, and a CMNDBA user name for the Common database:

```
SQL> CREATE USER BPMDBA IDENTIFIED BY [password] DEFAULT TABLESPACE [tablespace_name];
SQL> CREATE USER PDWDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
SQL> CREATE USER CMNDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
```

3. Grant privileges to the users that you specified in the previous step. For example:

```
SQL> GRANT ALL PRIVILEGES TO BPMDBA;
SQL> GRANT ALL PRIVILEGES TO PDWDBA;
SQL> GRANT ALL PRIVILEGES TO CMNDBA;
```

4. Grant execute privileges on DBMS_LOCK. For example:

```
SQL> GRANT execute on DBMS_LOCK to BPMDBA;
SQL> GRANT execute on DBMS_LOCK to PDWDBA;
SQL> GRANT execute on DBMS_LOCK to CMNDBA;
```

Creating Process Center stand-alone profiles with an Oracle database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale* *install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: **Vista** **Windows 7**

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  `runas /user:MyAdminName /env pmt.bat`

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.

- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*\bin\ProfileManagement\pmt.bat
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
  7. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.
     c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

        When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
     d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
     e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
  8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
     - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
     - In the **Server name** field, enter a name for the server or accept the default value.
     - In the **Host name** field, enter a name for the host or accept the default value.
     - In the **Cell name** field, enter a name for the cell or accept the default value.

     Click **Next**.
  9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all

internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

   If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

   Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

   During profile deletion, you can remove the Windows service that is added during profile creation.

   IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
   Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

   a. Select the **Create a web server definition** check box.

   b. Specify the web server characteristics on the page, and click **Next**

   c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

   d. Click **Next**.

15. Advanced: Configure the databases using a design file.

a. Select **Use a database design file**.

b. Click **Browse**.

c. Specify the fully qualified path name for the design file.

d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

    Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Oracle**.

    b. Optional: If you want to change the default values, enter new names for the required databases.

        • The database names can be the same.

        • You must input the database service name for each database.

        • The database must already exist.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

    d. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

    Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 131. Required database configuration fields for Oracle

Field	Action needed
Process Server database	For the Process Server database, enter values for the following parameters: **User name** 　　Enter a user name for the Process Server database (such as BPMDBA). **Password** 　　Enter the password that you specified when you created the user in Oracle. **Confirm password** 　　Confirm the password by reentering it. **Note:** The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 131. Required database configuration fields for Oracle (continued)

Field	Action needed
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: **User name** Enter a user name for the Performance Data Warehouse database (such as PDWDBA). **Password** Enter the password that you specified when you created the user in Oracle. **Confirm password** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.

- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with an Oracle database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default

language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: **Vista** Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  runas /user:MyAdminName /env pmt.bat

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin\ProfileManagement\pmt.bat**
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
  7. Advanced: On the Profile Name and Location page, perform the following steps:

a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing

certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:
    a. Select the **Create a web server definition** check box.
    b. Specify the web server characteristics on the page, and click **Next**
    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.
    d. Click **Next**.

15. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

16. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

17. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **Oracle**.

   b. Optional: If you want to change the default values, enter new names for the required databases.

      - The database names can be the same.

      - You must input the database service name for each database.

      - The database must already exist.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

   d. Click **Next**.

18. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

   Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 132. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	User name
	  Enter a user name for the Process Server database (such as BPMDBA).
	
	Password
	  Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	  Confirm the password by reentering it.
	Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	User name
	  Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	Password
	  Enter the password that you specified when you created the user in Oracle.
	
	Confirm password
	  Confirm the password by reentering it.
	Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.
- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

19. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

20. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.
1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:
   - default.procctr: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - default.procsvr: for a Process Server stand-alone profile for IBM BPM Standard or Express.
2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.
3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.

- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

  Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/default.procctr
-adminUserName bpmadmin -adminPassword bpmsecret -dbUserId db2user -dbPassword db2secret
-dbType DB2_DATASERVER -procSvrDbName BPMDB -perfDWDbName PDWDB
```

  If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

  The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with an Oracle database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

- Log into the Windows system as a local system user to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: | Vista | | Windows 7 |

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user

or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*\bin\ProfileManagement\pmt.bat
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
     - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
     - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
     - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
  7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all

internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

   Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **Oracle**.

   b. Optional: If you want to change the default values, enter new names for the required databases.

      • The database names can be the same.

      • You must input the database service name for each database.

      • The database must already exist.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

   d. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

    Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 133. Required database configuration fields for Oracle

Field	Action needed
Process Server database	For the Process Server database, enter values for the following parameters: **User name** Enter a user name for the Process Server database (such as BPMDBA). **Password** Enter the password that you specified when you created the user in Oracle. **Confirm password** Confirm the password by reentering it. **Note:** The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: **User name** Enter a user name for the Performance Data Warehouse database (such as PDWDBA). **Password** Enter the password that you specified when you created the user in Oracle. **Confirm password** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.
- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

11. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with an Oracle database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: Vista   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

  Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.

- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*\bin\ProfileManagement\pmt.bat

2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. On the Process Server Configuration page, set the values for the following parameters.
   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     – Select **Production** if the server is to be used in a production capacity.
     – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy

server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.
   a. Select **Use a database design file**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.
    a. From the **Select a database product** list, select **Oracle**.
    b. Optional: If you want to change the default values, enter new names for the required databases.
       - The database names can be the same.
       - You must input the database service name for each database.
       - The database must already exist.
    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.
    d. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. You cannot create a new database using Oracle.

    Important: You must have a user ID that has SYSDBA privileges before creating any profile. Specify the following fields.

Table 134. Required database configuration fields for Oracle

Field	Action needed

Process Server database	For the Process Server database, enter values for the following parameters:
	
	 User name
	     Enter a user name for the Process Server database (such as BPMDBA).
	
	 Password
	     Enter the password that you specified when you created the user in Oracle.
	
	 Confirm password
	     Confirm the password by reentering it.
	 Note: The Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	
	 User name
	     Enter a user name for the Performance Data Warehouse database (such as PDWDBA).
	
	 Password
	     Enter the password that you specified when you created the user in Oracle.
	
	 Confirm password
	     Confirm the password by reentering it.
	 Note: The Performance Data Warehouse database user name and the Process Server database user name cannot be the same.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1521 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\Oracle`

Because all the components use the same Oracle instance, there is no difference in the databases used for individual components.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- When you configure the Process Server, the Process Server messaging engine tables are created using the user and password specified for the Process Server messaging engine. If these values are not specified, the user and password for the Process Server are used.

- When you configure the Performance Data Warehouse, the Performance Data Warehouse messaging engine tables are created using the user and password specified for the Performance Data Warehouse messaging engine. If these values are not specified, the user and password for the Performance Data Warehouse is used.

12. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:
   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.
4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring Oracle databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root\profile*\dbscripts\ProcessServer\Oracle\ at profile creation time.

2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.

3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). In this example, **Oracle1** is the password to connect to the Oracle instance and service:

   ```
   wbi\ProcessServer\BPMDBA>sqlplus BPMDBA/Oracle1@BPMDBA @createTable_ProcessServer.sql
   ```

   Make sure all SQL statements succeed without any errors.

4. Create the table procedures for Process Server.

   From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). For example:

   ```
   wbi\ProcessServer\BPMDBA>sqlplus BPMDBA/Oracle1@BPMDBA @createProcedure_ProcessServer.sql
   ```

   Make sure all SQL statements succeed without any errors.

5. Reset the connection.

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.

1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root\profile*\dbscripts\PerformanceDW\Oracle\ at profile creation time.

2. Connect to your database.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **oracleDBUser**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **oracleDBUser** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.

3. Create the tables for Performance Data Warehouse.

From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). In this example, **Oracle1** is the password to connect to the Oracle instance and service:

```
wbi\PerformanceDW\BPMDBA>sqlplus PDWDBA/Oracle1@BPMDBA @createTable_PerformanceDW.sql
```

Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
1. Go to the directory containing the **configBusinessSpaceDB.bat** script. The default directory is *install_root**profile*\dbscripts\BusinessSpace*node_name_server_name*\DB2\CMNDB.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.bat

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

   install_root\profiles/ProcCtr01/bin

Run the bootstrap utility using the following syntax:
- **bootstrapProcessServerData.bat [-dbJDBCClasspath** *classpath*]

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*\jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Bootstrap data onto the default stand-alone profile server:
bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:
bootstrapProcessServerData -dbJDBCClasspath *JDBC_DRIVER_PATH*

Configuring a stand-alone environment with an SQL Server database server on Windows:

You can configure a stand-alone environment for IBM Business Process Manager using a Microsoft SQL Server database server.

Creating SQL Server databases:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:
   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:
      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
      ```

      where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.
   b. To create the Common database:
      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
      ```

      The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

   Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**.

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

   e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

   f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

   On Windows Vista and Windows 7:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

   c. Right-click **Local DTC** and then select **Properties**.

   d. Click the **Security** tab on the **Local DTC Properties** dialog box.

   e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

   f. Click **OK** again to close the Properties dialog box, and then close Component Services.

   g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

   a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

   b. Unzip archive to any folder.

   c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the x86 folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the x64 folder.

   d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

   e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating database design files for SQL Server:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for stand-alone profiles with SQL Server:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a stand-alone profile. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   ```

```
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the stand-alone profile that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".standalone."

   For example, to configure the database pattern for a stand-alone environment for IBM Business Process Manager Advanced, type the number 2 to select option **(2)bpm.advanced.standalone.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]         WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]      WBI_BSPACE :  [status = not complete]
   (6)[SibME]       WBI_BPC_ME :  [status = not complete]
   (7)[SibME]       WBI_CEI_ME :  [status = not complete]
   (8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]       WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]      BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]      BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database server host[default=] :
   Database User name[default=] :
   Database schema[default=] :
   System user name(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   System password(this is required ONLY for creating the database as a part of standalone profile
   creation.)[default=] :
   ```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server port[default=1433] :

[info] Please pick one of the following {Do you want to use windows authentication for the
databases ? (s)] :

(1) false
(2) true

Data source user name[default=] :
Data source password[default=] :
MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

-------------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]    WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

If you selected **bpm.standard.standalone**, after you configure the **BPM_ProcessServer**, you must manually configure the **BPM_PerformanceDW** component for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(5)[save and exit]
```

```
   Please enter the number for the database component :2
   --------------------------------------------------------------------------------

   [status] BPM_PerformanceDW is not complete with 1 remaining item(s):
   [ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
   required property 'databaseUser' for DB_USER is empty.

   Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
   [status] bpm.advanced.standalone is complete with 0 remaining item(s):

   Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
   Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
   generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
   [info] The script(s) have been generated in
   C:\IBM\WebSphere\AppServer\util\dbUtils\SQLServer-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
   [info] thanks, quitting now ...
```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with SQL Server in a stand-alone environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

```
C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat
```

Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.

When the database design tool launches successfully, you see information similar to the following example:

```
[info] running DbDesignGenerator in interactive mode...

[info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
help at any time.
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

    You are prompted to choose a component, as shown in the following example:

    ```
    [info] Please pick one of the following [component(s)] :

    (1)bpc
    (2)bpcreporting
    (3)bpm_performancedw
    (4)bpm_processserver
    (5)bspace
    (6)cei
    (7)sca
    (8)sibme
    (9)wbi_commondb
    ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

    For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

    You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

    ```
    Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
    ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

    Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

    You are prompted to select the database type that you are configuring; for example:

    ```
    [info] Please pick one of the following [database type(s)] :

    (1)DB2-distributed
    (2)DB2-zOS
    (3)Oracle
    (4)SQL Server
    ```

5. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Process Server database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=BPMDB] :
   Database server host[default=] :
   Database User name[default=] :

   [info] Please pick one of the following [Is this database for a Process Center?(s)] :

   (1)false
   (2)true

   Please enter the number for the Is this database for a Process Center? [default=false] :
   The user ID you use for administrative security[default=] :
   The password for the name specified with the adminUserName parameter[default=] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.

   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server port[default=1433] :

      [info] Please pick one of the following {Do you want to use windows authentication for the
      databases ? (s)] :

      (1) false
      (2) true

      Data source user name[default=] :
      Data source password[default=] :
      MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a

profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.standalone.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\SQLServer-ProcessServer for BPM_ProcessServer
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v SQL Server-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating or augmenting stand-alone profiles with an SQL Server database server:

You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility. You can augment an existing profile instead of creating a new one if you have an existing WebSphere Application Server V8.0 profile.

Preparing your SQL Server database server:

During the profile creation or augmentation process, you can choose to configure the Process Server database, Performance Data Warehouse database, and Common database. Alternatively, you can configure the databases using a design file that was generated by the database design tool.

Before creating a profile, you must install Microsoft SQL Server on the server that hosts the database.

Restriction: The Process Server database (BPMDB) and the Performance Data Warehouse database (PDWDB) must NOT be case-sensitive. Other databases can be case-sensitive.

When you create your database schemas, you must have a user ID with enough authority to create your tables. After the tables are created, the applications must have enough authority to select, insert, update, and delete information in the tables.

The following table shows the database privileges that are required to access the data store.

Table 135.

Database management system	Minimum privilege required to use the data store tables	Additional privilege required to create the data store tables
Microsoft SQL Server	Configure the SQL Server for SQL Server so that authentication can be based on an SQL server login ID and password. The user ID can own the tables or be a member of a group that has sufficient authority to issue TRUNCATE TABLE statements.	The user ID requires the CREATE TABLE statement privilege.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the `CMNDB` database as owner `dbo` using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- `MEDPS00` (Process Server messaging engine)
- `MEDPE00` (Performance Data Warehouse messaging engine)

IBM Business Process Manager packages JDBC drivers for SQL Server. For information about the JDBC drivers (including version and level information), see the Detailed hardware and software requirements for IBM Business Process Manager page.

Note: You are responsible for providing JDBC driver levels outside of what is packaged with IBM Business Process Manager.

You must configure XA transactions after the database is installed and before you start the server.

Creating Process Center stand-alone profiles with an SQL Server database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Center using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: Vista   Windows 7
- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin****ProfileManagement****pmt.bat**

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Center Stand-alone** profile and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:
    a. Select the **Create a web server definition** check box.
    b. Specify the web server characteristics on the page, and click **Next**
    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.
    d. Click **Next**.

15. Advanced: Configure the databases using a design file.
    a. Select **Use a database design file**.
    b. Click **Browse**.
    c. Specify the fully qualified path name for the design file.
    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the

database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

> **Important:** If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

Skip to the Profile Summary step

16. On the Database Configuration - Part 1 page, specify your database information.

a. From the **Select a database product** list, select **Microsoft SQL Server**.

b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

d. Click **Next**.

17. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 136. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	
Process Server database	For the Process Server database, enter values for the following parameters: • **User name** Enter the Process Server database user name. • **Password** Enter a password to authenticate with the Process Server database. • **Confirm password** Confirm the password to authenticate with the Process Server database.
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name** Enter the Performance Data Warehouse database user name. • **Password** Enter a password to authenticate with the Performance Data Warehouse database. • **Confirm password** Confirm the password to authenticate with the Performance Data Warehouse database.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.

Field	Action needed
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 137. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

18. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

19. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating Process Server stand-alone profiles with an SQL Server database server using the Profile Management Tool:

You can configure a stand-alone profile for Process Server using the Profile Management Tool.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar`

Restrictions: `Vista` `Windows 7`

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

`runas /user:MyAdminName /env pmt.bat`

    Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin\ProfileManagement\pmt.bat**

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the **IBM Business Process Manager Standard, Process Server Stand-alone** profile and click **Next**.
5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended) and the default WebSphere Application Server application. Click **Next** .
7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  – In the **Path** field, enter the directory path to the existing certificate.
  – In the **Password** field, enter the password for the certificate
  – In the **Keystore type** field, select the keystore type for the certificate you are importing.
  – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  – Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. Optional: Advanced: To include a web server definition in the profile, perform the following steps:

    a. Select the **Create a web server definition** check box.

    b. Specify the web server characteristics on the page, and click **Next**

    c. Specify the web server characteristics on Part 2 of the page. If you use a web server to route requests to IBM Business Process Manager, you must include a web server definition. You can include the definition now, or define the web server to IBM Business Process Manager later. If you include the web server definition during the creation of this profile, you can install the web server and its plug-in after you create the profile. However, you must install both to the paths that you specify on the web Server Definition pages. If you define the web server after you create this profile, you must define the web server in a separate profile.

    d. Click **Next**.

15. On the Process Server Configuration page, set the values for the following parameters.

    • **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    • Environment **Type**: Select how the Process Server is used:

      – Select **Production** if the server is to be used in a production capacity.

      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.

– Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

16. Advanced: Configure the databases using a design file.

    a. Select **Use a database design file**.

    b. Click **Browse**.

    c. Specify the fully qualified path name for the design file.

    d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

       Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

    e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

    Skip to the Profile Summary step

17. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Microsoft SQL Server**.

    b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

    d. Click **Next**.

18. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 138. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• `User name`
	  Enter the Process Server database user name.
	• `Password`
	  Enter a password to authenticate with the Process Server database.
	• `Confirm password`
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• `User name`
	  Enter the Performance Data Warehouse database user name.
	• `Password`
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• `Confirm password`
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 139. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the

following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

19. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
20. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Creating stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:

- `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
- `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/default.procctr
-adminUserName bpmadmin -adminPassword bpmsecret -dbUserId db2user -dbPassword db2secret
-dbType DB2_DATASERVER -procSvrDbName BPMDB -perfDWDbName PDWDB
```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Center with an SQL Server database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Center using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root\java\bin\java -Duser.language=`*`locale install_root`*`\bin\ProfileManagement\startup.jar`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root\java\bin\java -Duser.language=de `*`install_root`*`\bin\ProfileManagement\startup.jar`

Restrictions: **Vista**   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

  `runas /user:MyAdminName /env pmt.bat`

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*\bin\ProfileManagement\pmt.bat
  2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

8. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

9. On the Database Configuration - Part 1 page, specify your database information.

   a. From the **Select a database product** list, select **Microsoft SQL Server**.

   b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

   c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the

database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the **bootstrapProcessServerData** command.

d. Click **Next**.

10. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 140. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	

Process Server database	For the Process Server database, enter values for the following parameters:
	• **User name**
	  Enter the Process Server database user name.
	• **Password**
	  Enter a password to authenticate with the Process Server database.
	• **Confirm password**
	  Confirm the password to authenticate with the Process Server database.

Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters:
	• **User name**
	  Enter the Performance Data Warehouse database user name.
	• **Password**
	  Enter a password to authenticate with the Performance Data Warehouse database.
	• **Confirm password**
	  Confirm the password to authenticate with the Performance Data Warehouse database.

Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 141. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

- MEDPS00 (Process Server messaging engine)
- MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

11. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

12. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles for Process Server with an SQL Server database server using the Profile Management Tool:

If you have an existing WebSphere Application Server V8.0 stand-alone profile, you can configure a stand-alone profile for Process Server using the Profile Management Tool.

Remember to shut down any servers associated with a profile you plan to augment.

If you want to configure required databases while creating the profile, make sure that your database server is installed and running.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar`

Restrictions: ▐ **Vista** ▐ Windows 7
- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

  `runas /user:MyAdminName /env pmt.bat`

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a web server definition.
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*\bin\ProfileManagement\pmt.bat
  2. Shut down any servers associated with a profile you plan to augment.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. Click **Next**. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

8. On the Process Server Configuration page, set the values for the following parameters.

   - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
   - Environment **Type**: Select how the Process Server is used:
     - Select **Production** if the server is to be used in a production capacity.
     - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
     - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

   Restriction: Do not mix production and non-production servers in the same cell.
   Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

   If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

   - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
   - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
   - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
   - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Database Configuration - Part 1 step.

9. Advanced: Configure the databases using a design file.

   a. Select **Use a database design file**.

   b. Click **Browse**.

   c. Specify the fully qualified path name for the design file.

   d. To run the database scripts automatically (as part of the profile creation process), select **Run database scripts to create database tables**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

      Important: If you select **Run database scripts to create database tables**, ensure that **Use an existing local or remote database** is *not* selected. If both options are selected, errors occur.

   e. Click **Next**. If you choose to specify a design file, the database configuration panels in the Profile Management Tool are skipped. Instead, the design file location is passed to the command line to complete the database configuration.

   Skip to the Profile Summary step

10. On the Database Configuration - Part 1 page, specify your database information.

    a. From the **Select a database product** list, select **Microsoft SQL Server**.

    b. Optional: If you want to change the default values, enter new names for the required databases. The database names must be unique.

    c. To run the database scripts automatically as part of the profile creation process, select **Run database scripts to initialize the databases**. If you do not select the check box, you or the database administrator must run the scripts manually after profile creation completes. You must also load the database with system information by running the `bootstrapProcessServerData` command.

    d. Click **Next**.

11. On the Database Configuration - Part 2 page, complete the database configuration. Specify the following fields.

Table 142. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
Select the **Apply Windows Authentication** option to indicate that you will connect to your databases using your Windows authentication information. If you select this option, the Process Server databaseand Performance Data Warehouse database fields are made inactive.	
Process Server database	For the Process Server database, enter values for the following parameters: • `User name` Enter the Process Server database user name. • `Password` Enter a password to authenticate with the Process Server database. • `Confirm password` Confirm the password to authenticate with the Process Server database.

Table 142. Required database configuration fields for Microsoft SQL Server - Part 2 (continued)

Field	Action needed
Performance Data Warehouse database	For the Performance Data Warehouse database, enter values for the following parameters: • **User name** Enter the Performance Data Warehouse database user name. • **Password** Enter a password to authenticate with the Performance Data Warehouse database. • **Confirm password** Confirm the password to authenticate with the Performance Data Warehouse database.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.
Server port	Accept the default value of 1433 or enter the correct server port number.
Directory location of JDBC driver classpath files	The JDBC 2.0 driver classpath files (sqljdbc4.jar) are packaged with the product and are located in the following directory: `${WAS_INSTALL_ROOT}\jdbcdrivers\SQLServer`

Table 143. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action required for SQL Authentication	Action required for Windows Authentication
• **Process Server messaging engine schema name** • **Performance Data Warehouse messaging engine schema name**	Messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine. **Note:** For SQL Authentication, the schema names are mapped to the user IDs.	Messaging engine tables must be configured with different schema names. They cannot use the same schema name as any other messaging engine.

If you plan to use Microsoft SQL Server 2005 or Microsoft SQL Server 2008 with a stand-alone profile, and put the messaging engine tables into the Common database, you must create the following schemas in the **CMNDB** database as owner **dbo** using the SQL Server Studio. These schemas are required for the SIBus messaging engines.

Important: You must configure these schemas either before you start the server and messaging engine (recommended) or while the messaging engine is starting. Note that these are the default values if Windows Authentication is selected. You can specify different values. For SQL Authentication, the values are the same as the specified user IDs.

• MEDPS00 (Process Server messaging engine)

• MEDPE00 (Performance Data Warehouse messaging engine)

For stand-alone configurations only, when you configure the Process Server database, the Process Server messaging engine tables are created in the Process Server database. When you configure the Performance Data Warehouse database, the Performance Data Warehouse messaging engine tables are created in the Performance Data Warehouse database.

For stand-alone configurations only, there are some additional considerations for the users and schemas.

- SQL Authentication: The Service Component Architecture (SCA) system, SCA application, and Common Event Infrastructure (CEI) messaging engine tables must be configured with different users and passwords. They cannot use the same user and password as any other messaging engine.
- Windows Authentication: With Windows Authentication, because the user and password are always going to be the same, all messaging engines must have custom schemas defined so that the tables can be created with a different schema for each messaging engine. When the messaging engines are configured, the schemas are automatically created using the Windows user. If the Windows user does not have privileges to create the schemas, they must be created before the product is configured.

12. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
13. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

You have augmented a WebSphere Application Server V8.0 profile with an IBM Business Process Manager profile.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Augmenting stand-alone profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a stand-alone profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:
   - `default.procctr`: for a Process Center stand-alone profile for IBM BPM Standard or Express.
   - `default.procsvr`: for a Process Server stand-alone profile for IBM BPM Standard or Express.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions

are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/default.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- If you did not run the database scripts during profile creation, run the scripts to create the databases and load the Process Server database with system information using the **bootstrapProcessServerData** command.
- Proceed to the First Steps Console and start the server for the stand-alone profile you created.

Configuring SQL Server databases after stand-alone profile creation:

If you did not create the tables for the databases while creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Server database tables:

If you postponed creating the tables for the Process Server database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone server profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.
- Created the database that you want to create the Process Server database tables in. The default name for the Process Server database is **BPMDB**.

Do not perform these steps if you plan to create a network deployment environment.
1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root\profile*\dbscripts\ProcessServer\SQLServer\ at profile creation time.
2. Connect to your database.

   Important: It is necessary that you run the DDL scripts using the same user ID and password that you specified for authenticating to the database. You must also have the required installation privileges.
3. Create the tables for Process Server.

   From the directory that you navigated to in step 1, run **createTable_ProcessServer.sql** on the database that you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.
4. Create the table procedures for Process Server.

   From the directory that you navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server (BPMDB). Make sure all SQL statements succeed without any errors.

   Important: Use **GO** as a delimiting character when executing the stored procedure.
5. Reset the connection.

You have created the database tables for your Process Server and have completed the database configuration.

You can now load the database with system information and start the server.

Creating the Performance Data Warehouse database tables:

If you postponed creating the database tables for the IBM Performance Data Warehouse until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
- Chosen not to run the database scripts to initialize the databases during the configuration.

- Created the database that you want to create the Performance Data Warehouse database tables in. The default name for the Performance Data Warehouse database is **PDWDB**.
1. Go to the directory that holds the SQL scripts for creating the database tables. By default, SQL scripts are output to *install_root**profile*\dbscripts\PerformanceDW\SQLServer\ at profile creation time.
2. Connect to your database.

   Important: Be sure to run the DDL scripts using the same user ID and password that you specified for authenticating to the database. For a Performance Data Warehouse database design using the database design tool, there are **databaseUser** and **userName** properties available. For example, if these properties are set to the user ID **sqladmin**, the **createDatabase.sql** file will have a statement to grant database administrator authority to the **sqladmin** user. The same user ID must be used to connect to the database. For more information, see the database design tool documentation.
3. Create the tables for Performance Data Warehouse.

   From the directory that you navigated to in step 1, run **createTable_PerformanceDW.sql** on the database that you configured for the Performance Data Warehouse (PDWDB). Make sure all SQL statements succeed without any errors.

You have created the database tables for your Performance Data Warehouse and have completed the database configuration.

Creating the Business Space database tables:

If you postponed creating the Business Space database tables in the Common database until after profile creation, you or your database administrator must create the tables manually. You can use the scripts that the Profile Management Tool generates during profile creation or augmentation.

You have performed the following actions:
- Created or augmented a stand-alone profile.
1. Go to the directory containing the **configBusinessSpaceDB.bat** script. The default directory is *install_root**profile*\dbscripts\BusinessSpace*node_name_server_name*\DB2\CMNDB.
2. Use your standard database definition tools, native commands, and procedures to create the database and required tables by running this script. Run the following command:

   configBusinessSpaceDB.bat

Loading the database with system information in a stand-alone environment:

If you created a stand-alone profile and postponed creating the database tables, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the 98database.xml file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

Note: This command runs automatically when you create a stand-alone profile and choose to create the database during profile creation or augmentation.
If you create a stand-alone profile and delay the database table setup, you must run the bootstrap command after the database and its tables have been created and before the server is started for the first time.

Run the bootstrap utility from the command line. The bootstrap utility is found in the stand-alone profile directory. For example:

> *install_root*\profiles/ProcCtr01\bin

Run the bootstrap utility using the following syntax:

- **bootstrapProcessServerData.bat [-dbJDBCClasspath** *classpath***]**

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*\jdbcdrivers.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center. The log information for the bootstrap operation is saved to the *USER_INSTALL_ROOT*/logs/ directory in a file called bootstrapProcessServerData.*timestamp*.log. The console displays a subset of the logged information.

Important: If the bootstrap utility fails, check that when you created the Process Server and Performance Data Warehouse databases, the **COLLATE** attribute indicated case insensitive (**CI**), not case sensitive (**CS**). That is, the create command should look like this:

CREATE DATABASE *database_name* COLLATE SQL_Latin1_General_CP1_**CI**_AS

Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

Bootstrap data onto the default stand-alone profile server:

bootstrapProcessServerData

Bootstrap data onto the default stand-alone profile server with a custom JDBC driver location:

bootstrapProcessServerData -dbJDBCClasspath *JDBC_DRIVER_PATH*

Configuring a network deployment environment on Windows

For a network deployment configuration, you install the software and then create or augment a deployment manager, create or augment at least one custom profile, and configure the network deployment environment.

Granting write permission of files and directories to nonadministrative users for profile creation or augmentation:

If you are not the user who installed the product, you must have write permission to selected directories within the IBM Business Process Manager installation. The product installer can grant this permission or create a group with permission to create or augment profiles.

The product installer (who can be a administrative or nonadministrative user) can grant write permission to the appropriate IBM Business Process Manager files and directories to nonadministrative users. The nonadministrative users can then create profiles. Alternatively, the product installer can create a group for users who are authorized to create profiles or give individual users the authority to create profiles.

Nonadministrative users create their own profiles to manage their own environments. Typically, they manage environments for development purposes.

Nonadministrative users must store their profiles in their private directory structure, not in the *install_root*\profiles directory of the product.

Restrictions:
- IBM Business Process Manager does not support changing ownership of existing profiles from the product installer to nonadministrative users. A nonadministrative user cannot augment profiles owned by another user.
- Mechanisms within the Profile Management Tool that suggest unique names and port values are disabled for nonadministrative users. The nonadministrative user must change the default field values in the Profile Management Tool for the profile name, node name, cell name, and port assignments. The product installer can assign nonadministrative users a range of values for each of the fields, and assign responsibility to the users for adhering to their assigned value ranges and for maintaining the integrity of their own definitions.

If you already created at least one profile, certain directories and files were created. You can skip the steps in this topic that create these directories and files. If no profile was previously created, you must complete the steps to create the required directories and files.

The following example task shows how to create a group that is authorized to create profiles. The terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager. The installer can perform the following steps to create the profilers group and give the group appropriate permissions to create a profile.

1. Log on to the IBM Business Process Manager system as the product installer. The product installer can be a administrative or nonadministrative user.
2. Using operating system commands, perform the following steps:
   a. Create a group named **profilers**, which will contain all users who can create profiles.
   b. Create a user named **user1**, who can create profiles.
   c. Add users **product_installer** and **user1** to the **profilers** group.
3. Log off and log back on as the installer to pick up the new group.
4. If no profile exists, create the following directories as the installer:
   - Create the *install_root***logs****manageprofiles** directory by following instructions in the Windows documentation. For this example procedure, the directory is:

     install_root\logs\manageprofiles

- Create the *install_root***properties****fsdb** directory by following instructions in the Windows documentation. For this example procedure, the directory is:

  `install_root\properties\fsdb`

5. If no profile exists, create the `profileRegistry.xml` file as the installer. For this example, the file path is:

   `install_root\properties\profileRegistry.xml`

   Add the following information to the `profileRegistry.xml` file. The file must be encoded as UTF-8.

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <profiles/>
   ```

6. As the product installer, use operating system tools to change directory and file permissions. The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory **C:\Program Files\IBM\WebSphere\AppServer**. Follow instructions in the Windows documentation to give the **profilers** group read and write permission to the following directories and their files:

   ```
   @WASHOME\logs\manageprofiles
   @WASHOME\properties
   @WASHOME\properties\fsdb
   @WASHOME\properties\profileRegistry.xml
   ```

   You might have to change the permissions on additional files if the nonadministrative user encounters permission errors. For example, if the product installer authorizes a nonadministrative user to delete a profile, then the product installer might have to delete the following file:

   `install_root\properties\profileRegistry.xml_LOCK`

   Give write access to the nonadministrative user for the file to authorize the user to delete the file. If the nonadministrative user still cannot delete the profile, then the product installer can delete the profile.

The installer created the **profilers** group and gave the group the correct permissions to the directories and files required for a nonadministrative user to create profiles.

The nonadministrative user that belongs to the **profilers** group can create profiles in a directory that the nonadministrative user owns and to which the nonadministrative user has write permission. However, the nonadministrative user cannot create profiles in the installation root directory of the product.

The administrative user and the nonadministrative user can use the same tasks to manage profiles.

Creating databases and database design files:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. You must create the databases before network deployment.

Creating databases and database design files for DB2:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

Creating DB2 databases:

You can create the required databases before you create profiles.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

Use the following command to create the databases for DB2 (replace the @ placeholder strings with the appropriate values):

```
create database @DB_NAME@ automatic storage yes  using codeset UTF-8 territory US pagesize 32768;
connect to @DB_NAME@;
grant dbadm on database to user @DB_USER@;
UPDATE DB CFG FOR @DB_NAME@ USING LOGFILSIZ 4096 DEFERRED;
UPDATE DB CFG FOR @DB_NAME@ USING LOGSECOND 64 DEFERRED;
connect reset;
```

Creating database design files for DB2:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with DB2:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.
```

```
-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).


-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.


-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.

   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :
   ```

```
(1)[WBI_CommonDB]       WBI_CommonDB : [master] [status = not complete]
(2)[BPC]         WBI_BPC :  [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = not complete]
(6)[SibME]       WBI_BPC_ME :  [status = not complete]
(7)[SibME]       WBI_CEI_ME :  [status = not complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
(9)[SibME]       WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]       BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]       BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

```
[status] WBI_CommonDB is not complete with 1 remaining item(s):
[ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database configuration for the component, type y and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database User name[default=] :
Schema name[default=] :
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=50000] :
Data source user name[default=] :
Data source password[default=] :
DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

-----------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC : [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW : [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer : [status = not complete]
(5)[BSpace]     WBI_BSPACE : [status = complete]
(6)[SibME]      WBI_BPC_ME : [status = complete]
(7)[SibME]      WBI_CEI_ME : [status = complete]
(8)[SibME]      WBI_SCA_APP_ME : [status = complete]
```

```
 (9)[SibME]    WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

If you selected **bpm.standard.nd**, after you configure the master component, all database components are listed as complete.

```
[info] Please pick one of the following [database component(s)] :

(1)[BPM_ProcessServer]  BPM_ProcessServer : [master] [status = complete]
(2)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(3)[SibMe]       BPM_PerformanceDW_ME :  [status = complete]
(4)[SibMe]       BPM_ProcessServer_ME :  [status = complete]
(5)[save and exit]

Please enter the number for the database component :5

[status] bpm.standard.nd is complete with 0 remaining item(s):
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with DB2 in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
```

```
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
      Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :
   
   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

5. Type 1 to select **(1)DB2-distributed**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name[default=CMNDB] :
   Database User name[default=] :
   Schema name[default=] :
   Regular pagesize[default=32k] :
   Regular TableSpace[default=WBISPACE] :
   Temporary pagesize[default=32k] :
   Temporary TableSpace[default=WBITEMPSPACE] :
   ```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

   ```
   [info] You have completed database objects section properties needed for database scripts generation.
   
   To skip data source properties, enter 's'; or enter anything else to continue :
   ```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database provider for the **DB2-distributed** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :
   
   (1)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

   ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server host[default=] :
      Database server port[default=50000] :
      Data source user name[default=] :
   ```

```
Data source password[default=] :
DB2 JCC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
```

Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred
      value and press Enter. If you are asked whether you want to create the database tables during
      configuration, specify **false** if you are using the database design file as input for creating a
      profile, because this option is also available in the Profile Management Tool and causes a conflict.
      If you are using the administrative console to create your deployment environment, you can
      decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
   ```

8. Press Enter to accept the default directory for the database design file, or type another directory to
   which you want to save the file and then press Enter. If you have not yet created the directory in
   your file system, the database design tool will automatically create it when the file is generated.
   After you enter the location at the prompt, you see information similar to the following example:

   ```
   Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
   ```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you
   enter the file name, you see information similar to the following example:

   ```
   generate database scripts? (y/n) [default=y] :
   ```

10. Optional: If you also want to generate database scripts based on the information provided to the
    database design tool, type y and press Enter. You see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB
    ```

    ```
    [info] thanks, quitting now ...
    ```

A database design file is created and, optionally, database scripts are created at the locations that you
specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be
used to create the database tables. The generated database design file includes only values for this
configured component and is not sufficient for use in the following ways:
- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information
provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the
following type in the output:
```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type
in the output:

```
DbDesignGenerator.bat -v DB2-distributed-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating database design files and database scripts (Windows network deployment):

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files and database scripts for deployment environments with DB2 for z/OS:

Use the database design tool to generate a design file that is used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool also generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
* Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  – The location of the database tables.
  – The location of the JDBC driver on the system where the server profile will be created.
  – The user ID and password for authenticating to the database.
* Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
* An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
* Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:
```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).
```

```
-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory C:\tmp\DB2-zOS\W1MYDB. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

* To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as C:\tmp\DB2-zOS\W8CELLDB. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
* To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as C:\tmp\DB2-zOS\W8S1DB. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

    C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

    Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
    When the database design tool launches successfully, you see information similar to the following example:

```
[info] running DbDesignGenerator in interactive mode...

[info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
help at any time.
[info] To accept the given default values, simply press the 'Enter' key.

[info] Please pick one of the following [design option(s)] :

(1)Create a database design for Standalone profile or Deployment Environment
(2)Create a database design for a single component
(3)Edit an existing database design
(4)Generate database scripts from a database design
(5)exit [q]

Please enter the number for the design option :
```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]         WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]      WBI_BSPACE :  [status = not complete]
   (6)[SibME]       WBI_BPC_ME :  [status = not complete]
   (7)[SibME]       WBI_CEI_ME :  [status = not complete]
   (8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
   (9)[SibME]       WBI_SCA_SYS_ME :  [status = not complete]
   (10)[SibMe]      BPM_PerformanceDW_ME :  [status = not complete]
   (11)[SibMe]      BPM_ProcessServer_ME :  [status = not complete]
   (12)[save and exit]
   ```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Data source user name[default=] :
Database schema name (SQLID)[default=] :
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool for indexes[default=BP2] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
```

```
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):


--------------------------------------------------------------------------------


[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]        WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = complete]
(6)[SibME]      WBI_BPC_ME :  [status = complete]
(7)[SibME]      WBI_CEI_ME :  [status = complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]     WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. For any database components that are listed as a parent to another component, configure the parent before the other components because the information provided will be used as default settings for the database component listing the parent. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

Note: For DB2 for z/OS, you must configure each of the remaining components. The following guidelines apply:

- Ensure that you specify the appropriate schema name for each of the remaining database components. Typically, the Process Server, Performance Data Warehouse, and messaging engine components require unique schema names; the remaining components can be assigned the same schema name. You might also be prompted for other values that are unique to the type of component being configured; for example, a prefix for table space names or a value for VSAM catalog names (VCAT).
- If you intend to use a single database for all the system integration bus messaging engines, specify unique prefixes for their table space names because these prefixes will be used to keep the table space name of each messaging engine unique within the database.

- As you configure each component, verify that the values inherited from the master component are appropriate, and amend as required. For example, if you are planning to use more than one database, you might want to amend the database name to reflect the planned distribution of database objects across the DB2 for z/OS subsystem.
- When configuring the Process Server component (**BPM_ProcessServer**), you are asked to specify whether the database is for a Process Center or Process Server:

```
[info] Please pick one of the following [Is this database for a Process Center?(s)] :

(1)false
(2)true
```

If you want to create a Process Center profile or cluster in a network deployment environment, you must choose the **true** option. If you set the option to **false**, you will not be able to access the Process Center console.

If the database is for a Process Server, you must choose the **false** option.

If you selected **bpm.advanced.nd.topology**, after you configure the master component, you must manually configure the **BPM_PerformanceDW** and **BPM_ProcessServer** components. Also edit the configuration values of the remaining components to ensure that the configuration is appropriate for each of the databases you want to create.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = complete]
(2)[BPC]         WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]       WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :12


[status] bpm.advanced.nd.topology is not complete with 6 remaining item(s):
[ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'catalog' for VCAT is empty.
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminUserName' for SECURITY_ADMIN_USER is empty.
[ 4 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property
'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.
[ 5 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'schemaName' for SCHEMA is empty.
[ 6 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects : required property
'catalog' for VCAT is empty.
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

```
[status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

14. To generate the database scripts for each component in the directory that you specified earlier, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
```

After the last set of scripts is generated, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

The following files are created:

- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories. Each of the directories also contains a **createDB2.sh** script, which you can later run together with the database scripts to create the database objects.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files and database scripts for a specific component with DB2 for z/OS in a network deployment environment:

You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.

- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

You are prompted to choose a component, as shown in the following example:

```
[info] Please pick one of the following [component(s)] :

(1)bpc
(2)bpcreporting
(3)bpm_performancedw
(4)bpm_processserver
(5)bspace
(6)cei
(7)sca
(8)sibme
(9)wbi_commondb
```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   `Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :`

4. Type an output directory for the SQL scripts and press Enter. You must specify a fully qualified directory path where you want to collate all the SQL scripts for a specific database; for example, `WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB`. Then press Enter. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   `[info] Please pick one of the following [database type(s)] :`

```
(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 2 to select **(2)DB2-zOS**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Data source user name[default=] :
Database schema name (SQLID)[default=] :
Bufferpool of 4K size for tables[default=BP1] :
Bufferpool for indexes[default=BP2] :
Bufferpool of 4K size for LOB data[default=BP3] :
Bufferpool of 8K size for tables[default=BP8K1] :
Bufferpool of 16K size for tables[default=BP16K1] :
Bufferpool of 32K size for tables[default=BP32K1] :
Storage group name[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **DB2-zOS** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS
(2)DB2 Universal JDBC Driver Provider on local z/OS
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider (XA) on remote z/OS** as the database provider, type the number 1 and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database Location on z/OS system[default=] :
Database server host[default=] :
Database server port[default=] :
Data source user name[default=] :
Data source password[default=] :
DB2 Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
Universal JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2] :
DB2 Universal JDBC driver native path(This should be empty since DB2 z on remote Machine accessed
through jdbcDriver Type 4)[default=] :
```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false**. This option enables you to run the SQL scripts manually at your designated time, and to create and organize the databases according to your DB2 for z/OS best practices and conventions.

   After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. To generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
WAS_HOME/profiles/default/dbscripts/DB2-zOS/W8CELLDB for WBI_CommonDB
```

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Related tasks:

"Creating the messaging engine data stores" on page 1414
If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Generating scripts for creating database objects in DB2 for z/OS:

From an installation of IBM Business Process Manager, you can generate database scripts for creating IBM Business Process Manager database objects in a DB2 for z/OS database subsystem. You can use the database design tool to generate the scripts.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Prepare the following information, which provides input to the database scripts that you plan to generate:

- Information about how IBM Business Process Manager and its components are installed.
- Information about the database configuration that you are designing for the DB2 for z/OS subsystem. This information can be supplied by the database administrator or solution architect, and can include details about the required parameters and properties; for example:
  - Database server details
  - Data source details
  - Location of the JDBC driver on the system where the server profile will be created
  - User ID and password for authenticating to the database
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

To generate the database scripts for creating your database objects, you can run the database design tool in silent mode with the **-g** command-line parameter. In this mode, the tool requires input from a database design file that defines the configuration for your DB2 for z/OS database. The database design file must already exist before you generate the database scripts. You can generate the database design file by running the database design tool in interactive mode, or by using a configuration planning spreadsheet:

- You can run the database design tool in interactive mode to generate a database design file. Follow the prompts in the tool to define a DB2 for z/OS database configuration for your stand-alone or network deployment topology.
- The configuration planning spreadsheet is a supplementary artifact that can be downloaded from the IBM Support Portal. The spreadsheet is primarily intended for use with IBM Business Process Manager for z/OS, but can be tailored for use with IBM Business Process Manager on Linux on System z. The configuration planning spreadsheet consists of a number of worksheets that use color coding and comments to assist with data entry, and to help you establish naming conventions. The spreadsheet also includes macros that you can use to generate a database design file, among other files. Before using the spreadsheet, run the database design tool in interactive mode to become familiar with the required configuration options for each of the components.

  You can download the Microsoft Excel spreadsheet from Techdoc WP102075. The data that you require to complete the spreadsheet can span multiple roles, such as systems programmer, product

administrator, and database administrator. Therefore, it is advisable to review the spreadsheet in detail and then work with the relevant personnel to establish naming conventions and to complete the entries. After completing the entries, use the **Save** button on the DataBase Design File worksheet to generate the database design file.

While defining a DB2 for z/OS database configuration, you can specify how to group the SQL database scripts that you want to generate for the IBM Business Process Manager components. The default setting is for the scripts to be generated in individual directories for each component. Before you run the database design tool, decide on a location for storing the files that the tool will generate. It is important to use a directory path and structure that reflects how you want the database objects to be distributed across the DB2 for z/OS subsystem. For each database to be created, use a single output directory, and generate all the schema that is required to create the database, into that directory. As a reference aide, you can also base the name of the SQL directory on the name of the database that you plan to create.

For example, if you intend to create a single database called W1MYDB, you can generate the database scripts for all the database components in the single directory `C:\tmp\DB2-zOS\W1MYDB`. If you require two databases, which are scoped at the cell level and the cluster level, you can structure the database schema as shown in the following example:

- To create a database called W8CELLDB, which contains database objects that are scoped at the cell level, generate the database scripts for the Common database component in a directory such as `C:\tmp\DB2-zOS\W8CELLDB`. You can later run the generated schema to create the database objects for the Common database component in the W8CELLDB database.
- To create a database called W8S1DB, which contains the database objects that are scoped at the cluster level, generate the database scripts for all the remaining IBM Business Process Manager components in a directory such as `C:\tmp\DB2-zOS\W8S1DB`. You can later run the generated schema to create the database objects for these components in the W8S1DB database.

1. If necessary, copy the database design file, which defines your DB2 for z/OS configuration, to the workstation where IBM Business Process Manager is installed, to make the file available for use with the **DbDesignGenerator** command.

2. From the command line, change to the IBM Business Process Manager directory where the **DbDesignGenerator** command is stored:

   cd *install_root*\util\dbUtils

   For example: cd C:\IBM\WebSphere\AppServer\util\dbUtils

3. Run the **DbDesignGenerator** command using the following syntax:

   DbDesignGenerator.bat -g *db_design_file*

   where *db_design_file* is the fully qualified name of the database design file. For example:

   DbDesignGenerator.bat -g C:\tmp\DB2-zOS\W8CELL.nd.dbDesign

4. Review the information that is displayed on the screen, checking that no error messages are displayed. For each database component, the database design tool writes information messages to the screen to indicate that the scripts were generated in the directory specified in the database design file. For example, for the Common database component, you see information similar to the following example:

   [info] The script(s) have been generated in
   C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB for WBI_CommonDB

   After the last set of scripts is generated, you see information similar to the following example:

   [info] thanks, quitting now ...

   A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

   Tip: In the database design file, the directories for the SQL scripts are defined by the *ddl_outDir* variable in each component section. If you want to generate the SQL scripts to a set of different

directories, a quick way to do this is to manually update the values of the *ddl_outDir* variables. Then save the database design file, and run the **DbDesignGenerator** command again.

1. Check the specified directory locations to see the database scripts that were generated. Each directory additionally includes a **createDB2.sh** script that you can use to run the SQL.

   To use these scripts to create the IBM Business Process Manager database objects in the DB2 for z/OS subsystem, you must first transfer the scripts to the z/OS system.

2. Use FTP to transfer all the generated database scripts to the z/OS system that contains the installation of DB2. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.

3. Run the **createDB2.sh** script from the z/OS UNIX System Services command environment to create the DB2 for z/OS database objects.

   Note: The **createDB2.sh** script requires execute permissions.

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v DB2-zOS-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Setting up databases for Oracle:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

You can use a single instance of Oracle for configuring BPM. The Oracle instance must exist and be available for access. Consult the Oracle documentation to create an Oracle instance. If you use a single Oracle instance, make sure that you use different user IDs for the three different BPM databases.

1. Create a table space.

   ```
   SQL> CREATE TABLESPACE [tablespace_name] DATAFILE '[datafile_name]' SIZE 50M AUTOEXTEND ON NEXT 10M
   MAXSIZE UNLIMITED LOGGING;
   ```

2. Create the users. You will specify these users on the Database Configuration - Part 2 page in the Profile Management Tool. The following example assumes you create a BPMDBA user name for the Process Server database, a PDWDBA user name for the Performance Data Warehouse database, and a CMNDBA user name for the Common database:

```
SQL> CREATE USER BPMDBA IDENTIFIED BY [password] DEFAULT TABLESPACE [tablespace_name];
SQL> CREATE USER PDWDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
SQL> CREATE USER CMNDBA IDENTIFIED BY [password] DEFAULT TABLESPACE
[tablespace_name];
```

3. Grant privileges to the users that you specified in the previous step. For example:

```
SQL> GRANT ALL PRIVILEGES TO BPMDBA;
SQL> GRANT ALL PRIVILEGES TO PDWDBA;
SQL> GRANT ALL PRIVILEGES TO CMNDBA;
```

4. Grant execute privileges on DBMS_LOCK. For example:

```
SQL> GRANT execute on DBMS_LOCK to BPMDBA;
SQL> GRANT execute on DBMS_LOCK to PDWDBA;
SQL> GRANT execute on DBMS_LOCK to CMNDBA;
```

Creating database design files for Oracle:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with Oracle:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
    display help info.

-e db_design_file_name
    edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
    when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
    generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and

press Enter. You see the list of database components that you can configure for the selected environment, with a prompt to choose a component to configure; for example:

```
[info] Please edit any database component with status of 'not complete' for required properties.
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]       WBI_CommonDB : [master] [status = not complete]
(2)[BPC]        WBI_BPC :  [status = not complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]     WBI_BSPACE :  [status = not complete]
(6)[SibME]      WBI_BPC_ME :  [status = not complete]
(7)[SibME]      WBI_CEI_ME :  [status = not complete]
(8)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

   For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

   ```
   [status] WBI_CommonDB is not complete with 1 remaining item(s):
   [ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

   Edit this database component? (y/n) [default=y] :
   ```

5. To edit the database configuration for the component, type y and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
   ```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

   ```
   [info] Please pick one of the following [database type(s)] :

   (1)DB2-distributed
   (2)DB2-zOS
   (3)Oracle
   (4)SQL Server
   ```

7. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

   ```
   [info] Please enter the values for the properties in the database objects section.
   Database name(SID) [default=CMNDB] :
   Database User name[default=] :
   Database schema [default=] :
   ```

```
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
Database Location(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

Note: The password is encrypted in the generated output files.

b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
[status] WBI_CommonDB is complete with 0 remaining item(s):

--------------------------------------------------------------------------------

[info] Please edit any database component with status of 'not complete' for required properties.
```

```
[info] Completed database components can be edited to change existing or defaulted property values.
[info] Design the 'master' component first, and then any parent components,
since other components may inherit values from them.

[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPC]          WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(5)[BSpace]      WBI_BSPACE :  [status = complete]
(6)[SibME]       WBI_BPC_ME :  [status = complete]
(7)[SibME]       WBI_CEI_ME :  [status = complete]
(8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
(9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe]      BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(11)[SibMe]      BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(12)[save and exit]
```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.advanced.nd.topology**, you must manually configure the **BPM_PerformanceDW**, **BPM_ProcessServer**, and the corresponding **SibMe** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(12)[save and exit]

Please enter the number for the database component :3
------------------------------------------------------------------------------------

[status] BPM_PerformanceDW is not complete with 1 remaining item(s):
[ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
required property 'databaseUser' for DB_USER is empty.

Edit this database component? (y/n) [default=y] :
[info] Please pick one of the following [database component(s)] :

(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPC] WBI_BPC :  [status = complete]
(3)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(4)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(5)[BSpace] WBI_BSPACE :  [status = complete]
(6)[SibME] WBI_BPC_ME :  [status = complete]
(7)[SibME] WBI_CEI_ME :  [status = complete]
(8)[SibME] WBI_SCA_APP_ME :  [status = complete]
(9)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(10)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
```

```
    (11)[SibMe] BPM_ProcessServer_ME :  [status = complete]
    (12)[save and exit]

    Please enter the number for the database component :4
    -------------------------------------------------------------------------------

    [status] BPM_ProcessServer is not complete with 3 remaining item(s):
    [ 1 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
    required property 'databaseUser' for DB_USER is empty.
    [ 2 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
    required property 'adminUserName' for SECURITY_ADMIN_USER is empty.
    [ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects :
    required property 'adminPassword' for SECURITY_ADMIN_PASSWORD is empty.

    Edit this database component? (y/n) [default=y] :
```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    C:\IBM\WebSphere\AppServer\util\dbUtils\Oracle-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:
- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:
- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile

- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with Oracle in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

        C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.

   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

   ```
   Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
   ```

4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 3 to select **(3)Oracle**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name(SID) [default=CMNDB] :
Database User name[default=] :
Database schema [default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
Database Location(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **Oracle** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Oracle JDBC Driver # XA data source # Oracle JDBC Driver (XA)
```

a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server host[default=] :
Database server port[default=1521] :

[info] Please pick one of the following [Oracle driver type(s)] :

(1)oci8
(2)thin

Please enter the number for the Oracle driver type(s)? [default=thin] :
Data source user name[default=] :
Data source password[default=] :
Oracle JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/Oracle
] :
```

> **Note:** The password is encrypted in the generated output files.

    b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\Oracle-CommonDB for WBI_CommonDB

[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

- when you use the profile management tool to create a profile
- when you use the **manageprofiles** command-line utility to create a profile
- when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v Oracle-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a `dbDesignGenerator.log` file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Creating databases and database design files for SQL Server:

IBM Business Process Manager requires a Process Server database, Performance Data Warehouse database, and Common database. The Common database contains Business Space and other components. You must create the databases before network deployment.

Creating SQL Server databases:

You can create the required databases before you create profiles.

The default database names are BPMDB for the Process Server database, PDWDB for the Performance Data Warehouse database, and CMNDB for the Common database.

The Process Server and Performance Data Warehouse require their own separate databases and cannot be configured on the same database as the other BPM components.

1. Install Microsoft SQL Server.
2. Use the following commands to create the databases for SQL Server:
   a. To create the Process Server (BPMDB) and Performance Data Warehouse (PDWDB) databases:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CI_AS"
      ```

      where **hostname** is the host name of the system that hosts SQL Server, **db_user_account** and **db_user_password** are the user name and password that are used to log in to create the database, and **database_name** is the name of the database that you are creating. **COLLATE SQL_Latin1_General_CP1_CI_AS** is included because these databases must be case-insensitive.

   b. To create the Common database:

      ```
      osql -b -S hostname -U db_user_account -P db_user_password
      -Q "CREATE DATABASE database_name COLLATE SQL_Latin1_General_CP1_CS_AS"
      ```

      The difference is the COLLATE clause. CMNDB requires case-sensitive collation.

   Important: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

   ```
   org.springframework.beans.factory.BeanCreationException: Error creating bean with name
   'message.routingCache'
   defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
   org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
   [com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
   nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
   bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
   com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

   Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
   ```

```
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
    at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
    at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
    at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
    at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
    at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
    at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
    at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
    [...]
```

When using Microsoft SQL Server as the database for the Performance Data Warehouse, the following error message might be displayed during report generation using optimizer or portal for an existing process application. This prevents the report from being displayed.

```
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'slathresholdtraversals'.
    at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteCursored(SQLServerStatement.java:1824)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement.doExecuteStatement(SQLServerStatement.java:760)
    at com.microsoft.sqlserver.jdbc.SQLServerStatement$StmtExecCmd.doExecute(SQLServerStatement.java:685)
```

In Microsoft SQL server, the default schema name associated with a user must be the same as the user name. For example, if the Performance Data Warehouse database user name is *perfDB* then the default schema name associated with the user *perfDB* must also be named *perfDB*. You must create an ordinary database user and assign the required rights to the user instead of using a super user, such as *sa*. This is because the default schema for the super user is dbo and this cannot be changed.

You can complete the following steps if existing tables are not associated with a schema that is the same as the user name.

a. In SQL Server Management Studio Object Explorer, right-click the table name and then click **Design**.

b. From the Design view, press F4 to view the Properties window.

c. From the Properties window, update the schema name.

d. Right-click the tab and select **Close** to close the Design view.

e. Click **OK** when prompted to save. The selected table is transferred to the schema.

f. Repeat the previous steps for all the tables in the Performance Data Warehouse database.

When you create your database schemas, you must have a user ID with enough authority to create your tables. After the tables are created, the applications must have enough authority to select, insert, update, and delete information in the tables.

The following table shows the database privileges that are required to access the data store.

Table 144.

Database management system	Minimum privilege required to use the data store tables	Additional privilege required to create the data store tables
Microsoft SQL Server	Configure the SQL Server for SQL Server so that authentication can be based on an SQL server login ID and password. The user ID can own the tables or be a member of a group that has sufficient authority to issue TRUNCATE TABLE statements.	The user ID requires the CREATE TABLE statement privilege.

Configuring XA transactions:

You must configure XA transactions after the Microsoft SQL Server database is installed and before you start the server. The SQL Server JDBC driver provides support for Java Platform, Enterprise Edition/JDBC 2.0 optional distributed transactions. JDBC connections obtained from the **SQLServerXADataSource** class can participate in standard distributed transaction processing environments such as Java Platform, Enterprise Edition (Java EE) application servers.

Failure to configure the XA transactions can result in the following error during server startup: **javax.transaction.xa.XAException: com.microsoft.sqlserver.jdbc.SQLServerException: Failed to create the XA control connection. Error: "Could not find stored procedure 'master..xp_sqljdbc_xa_init_ex'."**..

1. The MS DTC service should be marked Automatic in Service Manager to make sure that it is running when the SQL Server service is started. To enable MS DTC for XA transactions, you must follow these steps:

   On Windows XP and Windows Server 2003:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** and right-click **My Computer**, and select **Properties**.

   c. Click the **MSDTC** tab, and then click **Security Configuration**.

   d. Select the **Enable XA Transactions** check box, and then click **OK**. This will cause a MS DTC service restart.

   e. Click **OK** again to close the **Properties** dialog box, and then close **Component Services**.

   f. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

   On Windows Vista and Windows 7:

   a. Select **Control Panel** > **Administrative Tools** > **Component Services**.

   b. Select **Component Services** > **Computers** > **My Computer** > **Distributed Transaction Coordinator**.

   c. Right-click **Local DTC** and then select **Properties**.

   d. Click the **Security** tab on the **Local DTC Properties** dialog box.

   e. Select the **Enable XA Transactions** check box, and click **OK**. This will restart the MS DTC service.

   f. Click **OK** again to close the Properties dialog box, and then close Component Services.

   g. Restart SQL Server to ensure that it syncs up with the MS DTC changes.

2. Configure the JDBC Distributed Transaction Components:

   a. Download "Microsoft SQL Server JDBC Drive 2.0" driver from the Microsoft Site using the URL from Resources section.

   b. Unzip archive to any folder.

   c. Copy the `sqljdbc_xa.dll` file from the `JDBC unarchived` directory to the `Binn` directory of SQL Server computer. If you are using XA transactions with a 32-bit SQL Server, use the `sqljdbc_xa.dll` file in the `x86` folder, even if the SQL Server is installed on a x64 processor. If you are using XA transactions with a 64-bit SQL Server on the x64 processor, use the `sqljdbc_xa.dll` file in the `x64` folder.

   d. Execute the `xa_install.sql` database script on SQL Server . This script installs the extended stored procedures that are called by `sqljdbc_xa.dll`. These extended stored procedures implement distributed transaction and XA support for the Microsoft SQL Server JDBC Driver. You will need to run this script as an administrator of the SQL Server instance.

   e. To grant permissions to a specific user to participate in distributed transactions with the JDBC driver, add the user to the SqlJDBCXAUser role in the master database (for example, for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating database design files for SQL Server:

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating database design files for deployment environments with SQL Server:

You can use the database design tool to generate a design file that can be used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool optionally generates database scripts that you can use to create your database tables.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:
- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
```

```
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For
   example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered
   the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following
   example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(1)Create a database design for Standalone profile or Deployment
   Environment**, type the number 1 and press Enter.

   You are prompted to choose a database pattern, as shown in the following example:

   ```
   [info] Please pick one of the following [database pattern(s)] :

   (1)bpm.advanced.nd.topology
   (2)bpm.advanced.standalone
   (3)bpm.standard.nd
   (4)bpm.standard.standalone
   (5)wesb.nd.topology
   (6)wesb.standalone
   ```

3. To create a database design pattern for the deployment environment that you plan to configure, type
   the number for the appropriate option and press Enter. Select options that include ".nd."

   For example, to configure the database pattern for a deployment environment for IBM Business
   Process Manager Advanced, type the number 1 to select option **(1)bpm.advanced.nd.topology**, and
   press Enter. You see the list of database components that you can configure for the selected
   environment, with a prompt to choose a component to configure; for example:

   ```
   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]      WBI_CommonDB : [master] [status = not complete]
   (2)[BPC]         WBI_BPC :  [status = not complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]      WBI_BSPACE :  [status = not complete]
   (6)[SibME]       WBI_BPC_ME :  [status = not complete]
   (7)[SibME]       WBI_CEI_ME :  [status = not complete]
   (8)[SibME]       WBI_SCA_APP_ME :  [status = not complete]
   ```

```
(9)[SibME]     WBI_SCA_SYS_ME :  [status = not complete]
(10)[SibMe]     BPM_PerformanceDW_ME :  [status = not complete]
(11)[SibMe]     BPM_ProcessServer_ME :  [status = not complete]
(12)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. The database component listed as the master component displays **[master]** beside the name and must be configured first.

For example, type the number 1 to select option **(1)[WBI_CommonDB] WBI_CommonDB : [master] [status = not complete]**, and press Enter. You see information similar to the following example:

```
[status] WBI_CommonDB is not complete with 1 remaining item(s):
[ 1 ] WBI_CommonDB.WBI_CommonDB :  : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database configuration for the component, type y and press Enter.

You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
Please enter the output directory of the SQL files to be generated for WBI_CommonDB [default=] :
```

6. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

7. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database server host[default=] :
Database User name[default=] :
Database schema[default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

8. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

The administrative security prompt (if present) refers to the user name and password for the administrative console.

After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

9. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.
   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

   ```
   [info] Please pick one of the following [database provider(s)] :

   (1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
   ```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

      ```
      [info] Please enter the values for the properties in the data source properties section.
      Database server port[default=1433] :

      [info] Please pick one of the following {Do you want to use windows authentication for the
      databases ? (s)] :

      (1) false
      (2) true

      Data source user name[default=] :
      Data source password[default=] :
      MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
      ```

      Note: The password is encrypted in the generated output files.

   b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

   After you complete the last prompt, you see information similar to the following example:

   ```
   [status] WBI_CommonDB is complete with 0 remaining item(s):

   ----------------------------------------------------------------------------------

   [info] Please edit any database component with status of 'not complete' for required properties.
   [info] Completed database components can be edited to change existing or defaulted property values.
   [info] Design the 'master' component first, and then any parent components,
   since other components may inherit values from them.

   [info] Please pick one of the following [database component(s)] :

   (1)[WBI_CommonDB]   WBI_CommonDB : [master] [status = complete]
   (2)[BPC]        WBI_BPC :  [status = complete]
   (3)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
   (4)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
   (5)[BSpace]     WBI_BSPACE :  [status = complete]
   (6)[SibME]      WBI_BPC_ME :  [status = complete]
   (7)[SibME]      WBI_CEI_ME :  [status = complete]
   (8)[SibME]       WBI_SCA_APP_ME :  [status = complete]
   (9)[SibME]      WBI_SCA_SYS_ME :  [status = complete]
   (10)[SibMe]       BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
   (11)[SibMe]       BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
   (12)[save and exit]
   ```

After you finish configuring the master database component, the database design tool propagates the values that you entered, to the remaining components. If this can be done successfully, these components are also marked as **[status = complete]** along with the master component. If this cannot be done for any reason, they remain listed as **[status = not complete]**.

10. Follow the preceding steps to configure the remaining database components that are listed as **[status = not complete]**. You can also choose to reconfigure any components that are listed as **[status = complete]** as the result of configuring the master database component.

    If you selected **bpm.standard.nd**, after you configure the **BPM_ProcessServer**, you must manually configure the **BPM_PerformanceDW** component for the required database authentication.

    ```
    [info] Please pick one of the following [database component(s)] :

    (1)[BPM_ProcessServer] BPM_ProcessServer : [master] [status = complete]
    (2)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
    (3)[SibMe] BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
    (4)[SibMe] BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
    (5)[save and exit]

    Please enter the number for the database component :2
    ---------------------------------------------------------------------------------

    [status] BPM_PerformanceDW is not complete with 1 remaining item(s):
    [ 1 ] BPM_PerformanceDW.BPM_PerformanceDW : databaseObjects :
    required property 'databaseUser' for DB_USER is empty.

    Edit this database component? (y/n) [default=y] :
    ```

11. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, type the appropriate number to select **[save and exit]**, and press Enter. You see information similar to the following example:

    ```
    [status] bpm.advanced.nd.topology is complete with 0 remaining item(s):

    Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
    ```

12. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

    ```
    Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
    ```

13. Press Enter to accept the default name for the database design file, or type another file name and then press Enter. If a file of the same name already exists in the specified directory, you can choose to either overwrite the file or specify a different file name. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

14. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. A series of information messages is displayed to indicate that the scripts for all the components have been generated. For each component, you see information similar to the following example:

    ```
    [info] The script(s) have been generated in
    C:\IBM\WebSphere\AppServer\util\dbUtils\SQLServer-CommonDB for WBI_CommonDB
    ```

    After the last set of scripts is generated, you see information similar to the following example:

    ```
    [info] thanks, quitting now ...
    ```

The following files are created:
- The database design file is created in the specified directory.
- The database scripts are created in one or more specified directories.
- A log file named dbDesignGenerator.log is created in the directory from which you ran the **DbDesignGenerator** command.

You can choose to use the output from the database design tool in one of the following ways:

- If you generated only the database design file, you can specify the database design file and select the option to have it create the database tables as part of those configuration steps.
- If you generated both the database design file and SQL scripts, you can specify only the database design file to ensure that the configured run time matches the database tables created from the SQL scripts.

You can specify the database design file in several ways:

- When you use the Profile Management Tool to create a profile
- When you use the **manageprofiles** command-line utility to create a profile
- When you use the Deployment Environment wizard to create your environment

The database design file can also be used when you configure a server as a Process Server, Process Center, or Performance Data Warehouse Server in the administrative console.

Creating database design files for specific components with SQL Server in a network deployment environment:

You can use the database design tool to generate a design file and database scripts for the database tables required by specific IBM Business Process Manager components.

Ensure that you have installed IBM Business Process Manager. The database design tool is available only from the installation binary files.

Before you run the database design tool, prepare the following information:

- Information about the database configuration that you are designing. This might be a document that describes the general purpose of the database configuration, supplied by the database administrator or solution architect. Alternatively, it might be a description of required parameters and properties. This information must include:
  - The location of the database tables.
  - The location of the JDBC driver on the system where the server profile will be created.
  - The user ID and password for authenticating to the database.
- Information about how IBM Business Process Manager and its components have been installed, the database software used, and the properties required by that type of database.
- An understanding of the profiles that you plan to create, specifically, the functional relationship between the profile types and the databases.
- Information about the topology pattern to be implemented, and an understanding of how the database design fits into the pattern that you plan to use.

You can run the database design tool in interactive mode to define your database configuration values and save them to a new database design file or to an existing file. You can optionally generate database scripts that can be used to create the database objects for your database type. When you run the tool, the available options change depending on the environment and database type being configured.

You can also run the database design tool in silent mode with command-line parameters to edit or validate an existing database design file, or to generate database scripts for the configuration defined in an existing database design file. The **DbDesignGenerator** command has the following command-line parameters:

```
-? , -help
   display help info.

-e db_design_file_name
   edit the specified database design file (e.g. *.dbDesign, *.properties).

-v db_design_file | db_scripts_output_directory
   when a db_design_file is given, validation will be done on the specified
```

```
 database design file based on the database specs.
When a db_scripts_output_directory is given, the database scripts
in the specified directory will be validated. Currently only
scripts generated from template ddl generator can be validated.

-g db_design_file [-d output_directory] [db_design_file2] [-d output_directory2] ...
[db_design_fileN] [-d output_directoryN]
   generate the database scripts from the specified design files in batch mode.
The generated scripts will be put in the corresponding output
directories or the default locations if output directories are absent.
```

Important: If you intend to generate database scripts for the service integration bus messaging engines, you must repeat all the steps of the following procedure to define the database configuration and generate the scripts for each messaging engine that you require. For example, if you require scripts for six messaging engines, perform this procedure six times.

1. Run the **DbDesignGenerator.sh** command from the *install_root*\util\dbUtils directory. For example:

   C:\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat

   Tip: If you see the message The system cannot find the specified path. you might have entered the path name incorrectly. Re-enter the path.
   When the database design tool launches successfully, you see information similar to the following example:

   ```
   [info] running DbDesignGenerator in interactive mode...

   [info] Enter 'q' to quit without saving; '-' for back to previous menu; '?' for
   help at any time.
   [info] To accept the given default values, simply press the 'Enter' key.

   [info] Please pick one of the following [design option(s)] :

   (1)Create a database design for Standalone profile or Deployment Environment
   (2)Create a database design for a single component
   (3)Edit an existing database design
   (4)Generate database scripts from a database design
   (5)exit [q]

   Please enter the number for the design option :
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted to choose a component, as shown in the following example:

   ```
   [info] Please pick one of the following [component(s)] :

   (1)bpc
   (2)bpcreporting
   (3)bpm_performancedw
   (4)bpm_processserver
   (5)bspace
   (6)cei
   (7)sca
   (8)sibme
   (9)wbi_commondb
   ```

3. To create a database design for the component that you plan to configure, type the number for the appropriate option and press Enter.

   For example, to configure the IBM Process Server database component, type the number 4 to select option **(4)bpm_processserver**, and press Enter.

   You are prompted for an output directory for the SQL scripts that the database design tool can generate, and which you can use to create your database objects. If you choose to generate SQL scripts later in this procedure, the scripts are automatically saved to this directory.

```
     Please enter the output directory of the SQL files to be generated for BPM_ProcessServer [default=] :
```
4. Type an output directory for the SQL scripts and press Enter. You can specify a fully qualified directory path, or a path that is relative to the current directory from which the database design tool is being run. If you have not yet created the directory in your file system, the database design tool automatically creates it when the SQL scripts are generated. If the specified directory already exists, you can choose to either overwrite its contents or specify another directory.

   Tip: The value that you specify will be saved as a reference in the database design file when this file is generated.

   You are prompted to select the database type that you are configuring; for example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

5. Type 4 to select **(4)SQL Server**, and press Enter. You obtain a series of prompts for the database properties. These prompts vary based on the database type.

   For example, after you select this database type for configuration of the Common database, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the database objects section.
Database name[default=CMNDB] :
Database server host[default=] :
Database User name[default=] :
Database schema[default=] :
System user name(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
System password(this is required ONLY for creating the database as a part of standalone profile
creation.)[default=] :
```

6. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter.

   The administrative security prompt (if present) refers to the user name and password for the administrative console.

   After you complete the last prompt for the database properties, you see information similar to the following example:

```
[info] You have completed database objects section properties needed for database scripts generation.

To skip data source properties, enter 's'; or enter anything else to continue :
```

7. To configure the data source properties component, type anything other than **s** and press Enter. To skip this configuration and accept the defaults, type **s** and press Enter.

   Tip: If you plan to use the database design tool to generate a database design file for use as input for profile creation or topology configuration, you must configure the data source. If you plan to use the database design tool to generate SQL, this step is optional.

   If you chose to configure the data source for your selected database type, you see the list of database providers for the data source. For example, you might see the following database providers for the **SQL Server** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)Microsoft SQL Server JDCB Driver # XA data source # Microsoft SQL Server JDBC Driver (XA)
```

   a. Type the appropriate number to select a database provider for the data source, and press Enter. After you select this database provider, you see a series of prompts similar to the following example:

```
[info] Please enter the values for the properties in the data source properties section.
Database server port[default=1433] :
```

```
[info] Please pick one of the following {Do you want to use windows authentication for the
databases ? (s)] :

(1) false
(2) true

Data source user name[default=] :
Data source password[default=] :
MS SqlServer JDBC driver path[default=${WAS_INSTALL_ROOT}/jdbcdrivers/SQLServer] :
```

> **Note:** The password is encrypted in the generated output files.

    b. At each prompt, either press Enter to accept the default value shown, or type your preferred value and press Enter. If you are asked whether you want to create the database tables during configuration, specify **false** if you are using the database design file as input for creating a profile, because this option is also available in the Profile Management Tool and causes a conflict. If you are using the administrative console to create your deployment environment, you can decide based on whether you want the tables to be created automatically.

After you complete the last prompt, you see information similar to the following example:

```
Please enter the output directory [default=C:\IBM\WebSphere\AppServer\util\dbUtils] :
```

8. Press Enter to accept the default directory for the database design file, or type another directory to which you want to save the file and then press Enter. If you have not yet created the directory in your file system, the database design tool will automatically create it when the file is generated. After you enter the location at the prompt, you see information similar to the following example:

```
Please enter the output filename [default=bpm.advanced.nd.topology.dbDesign] :
```

9. Press Enter to accept the default file name, or type another file name and then press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

10. Optional: If you also want to generate database scripts based on the information provided to the database design tool, type y and press Enter. You see information similar to the following example:

```
[info] The script(s) have been generated in
C:\IBM\WebSphere\AppServer\util\dbUtils\SQLServer-CommonDB for WBI_CommonDB

[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the locations that you specified.

After using the database design tool to configure a specific component, the generated SQL scripts can be used to create the database tables. The generated database design file includes only values for this configured component and is not sufficient for use in the following ways:

* when you use the profile management tool to create a profile
* when you use the **manageprofiles** command-line utility to create a profile
* when you use the Deployment Environment wizard to create your environment

Troubleshooting the database design tool:

If you have errors in your database scripts, you can use the diagnostic and validation information provided by the database design tool to diagnose the problems.

Required property is empty errors

When the required **userName** and **password** properties are not set, you might see messages of the following type in the output:

```
[status] WBI_BSPACE is not complete with 2 remaining item(s):
[ 1 ] BSpace.WBI_BSPACE : authAlias : required property 'userName' for userId is empty.
[ 2 ] BSpace.WBI_BSPACE : authAlias : required property 'password' for DB_PASSWORD is empty.
```

Sample output of running a validation of the existing database design

When you run a validation of the existing database design, you might see warnings of the following type in the output:

```
DbDesignGenerator.bat -v SQL Server-
...
[WARNING] 2 potential problems are found in the scripts. They are
DB_USER @ line 46 in file configCommonDB.bat
DB_USER @ line 80 in file configCommonDB.sh
```

Contents of the database design tool log file

When you run the database design tool, a dbDesignGenerator.log file is created in the location from which the database design tool command is run. The log contains all the prompts and values entered. The log file does not contain any additional trace output.

Configuring the network deployment environment using the configureNode command:

To configure a typical network deployment environment, you can use the **configureNode** command instead of using the Profile Management Tool and Deployment Environment wizard or the **manageprofiles** and **wsadmin** commands. This command provides limited customization by using a properties file, and creates a ready-to-use environment. You can also use **configureNode** later to extend the deployment environment.

Restriction: This command is not supported if your database type is DB2 for z/OS.

Important: The **configureNode** command cannot be run twice on one machine without first deleting the profile that was created. To run the **configureNode** command a second time, first delete the profile.

Creating the deployment environment using the configureNode command:

You can use the **configureNode** command to create a typical network deployment environment. The goal of this command is to provide a ready-to-use environment. The only parameters that can be customized are provided in a properties file.

Restriction: This command is not supported if your database type is DB2 for z/OS.

You must have installed the product and created all the databases that are specified in the properties file.

Important: You must have already installed the database software and created the databases (but do not create tables). You must also have created all the users that you specify in the properties file. Make sure the users have the installation privileges listed in Database privileges.

For your SQL Server database server:
- Make sure that the username and schema exist before the configuration is done. The schema value should be the default schema for the user chosen.
- If connections to the database will be made by the current Windows user that the server is running under, the SQL Server must have **Windows authentication mode** or **SQL Server and Windows Authentication mode** enabled, as specified through Microsoft SQL Server Management Studio.

Restriction: Run **configureNode** commands sequentially; do not try to run the command on multiple machines at the same time.

The **configureNode** command uses default ports to create the deployment manager. You cannot customize the ports using this command. The parameters listed in the sample files are the only parameters that can be customized. Make sure that no other profiles that are configured with default ports are started on the same machine.

The **configureNode** command creates the following network deployment topology:

- A single cell environment
- The environment contains the number of cluster members that you specify in the properties file
- The environment uses the Remote Messaging, Remote Support, and Web topology pattern, which includes the following four clusters:
  - Messaging infrastructure cluster
  - Supporting infrastructure cluster
  - Application deployment target cluster
  - Web application cluster

The command performs the following tasks:

- Creates the deployment manager node based on the values in the deployment manager properties file and starts the deployment manager.
- Creates the deployment environment definition.
- Creates a custom node based on the values in the custom node properties file.
- Federates the node and adds the node to the deployment environment.
- Generates the deployment environment.
- Creates the database tables. (You must already have created the databases. See "Before you begin" for instructions.)
- Runs the bootstrap utility to load the Process Server database with system information.
- Configures Business Space and Process Portal on the web application cluster.

The default port is used to create the deployment manager. If a deployment manager is already running on the machine when you run **configureNode**, creating the deployment environment fails. If a deployment manager has already been created but is not running, you must change the port of one of the deployment managers or you might get a port conflict error when you start the other deployment manager.

To create the deployment environment for the first time, complete the following steps:

1. On the machine where you want to create the deployment environment, locate the sample properties files: *install_root*\util\ndUtils\samples\.
2. Copy the sample files and modify the files to reflect your environment. For example, for a deployment manager for IBM BPM Standard for Process Server, choose the `sample_std_ps_dmgr.properties` file.

   For each database that you want to create, copy the database parameters section and specify the database name, user name, password, and schema name. The Process Server database, Performance Data Warehouse database, and Common database are required, and they must have different names.

   For more information about the available properties, read the comments in the sample files, or see the **configureNode** command reference and the examples.

   Restriction: The parameters listed in the sample files are the only parameters that can be customized.
3. Run the **configureNode** command, passing it the names of the two files you created. The custom node file is optional, but if you do not include it, only the deployment manager is created. For example:

   install_root\util\ndUtils\configureNode.bat -dmgr_response *my_dmgr_response_file.properties* -response *node01_response_file.properties*

Note: If you receive the **Failed to perform Security setting update** error, check to ensure that the global IP address has not been appended to **127.0.0.1 localhost** in the hosts file. For example: **127.0.0.1 localhost example.ibm.com**.

You now have a deployment manager, a custom node, and a deployment environment that use the Remote Messaging, Remote Support, and Web topology pattern.

Messages are recorded in the file *install_root*/logs/config/configureNode.log.

Tip: After you have configured a network deployment environment, if you test the data store connection (for example, in the administrative console, on the page **Resources** > **JDBC** > **Data sources**), you get a message saying that the test connection operation failed with the exception com.ibm.wsspi.runtime.variable.UndefinedVariableException: Undefined Variable WAS_INSTALL_ROOT. This does not necessarily indicate that there will be a problem accessing the data source at run time. Ensure that the location of your JDBC driver files is accessible to every client that must use the data source, and configure the variable with the full path of that location. Disregard the test connection error unless you are also experiencing trouble connecting to the data store at run time. For additional information, see the WebSphere Application Server documentation about the test connection service.

Important: If you use additional servers with unique ports, WebSphere Application Server does not automatically configure the virtual host for the server. Specifically, WebSphere Application Server does not automatically add the host alias ports to a virtual host. However, you can use the administrative console to add a new host alias for each of the ports that are used by the new server. For more information, see the WebSphere Application Server documentation about configuring virtual hosts.

Related concepts:

Virtual hosts

Related tasks:

Configuring virtual hosts

Related reference:

Test connection service

Extending the deployment environment using the configureNode command:

After you have created a deployment environment using the **configureNode** command, you can run the command at a later time to extend the deployment environment.

You need the following prerequisites before running the **configureNode** command:
- You must have installed the product on the machine where you want to extend the deployment environment.
- The deployment manager must be running.
- You must have created the deployment environment by running the **configureNode** command.

Restriction: Run **configureNode** commands sequentially; do not try to run the command on multiple machines at the same time.

1. On the machine where you want to extend the deployment environment, locate the sample custom node files: *install_root*\util\ndUtils\samples\

2. Copy the sample file that is most similar to the properties file that you need. For example, to extend the deployment environment for IBM BPM Standard for Process Server, choose the sample_std_ps_node.properties file.

   Modify the new custom node file to reflect your environment, including the details of the deployment manager.

For more information about the available properties, read the comments in the sample files, or see the **configureNode** command reference and the examples.

> **Restriction:** The parameters listed in the sample files are the only parameters that can be customized.

3. Run the **configureNode** command, passing it the name of the sample file. For example:

   > *install_root*\util\ndUtils\configureNode.bat -response *node01_response_file.properties*

   Note: If you receive the **Failed to perform Security setting update** error, check to ensure that the global IP address has not been appended to **127.0.0.1 localhost** in the hosts file. For example: **127.0.0.1 localhost example.ibm.com**.

You have extended the deployment environment.

Messages are recorded in the file *install_root*/logs/config/configureNode.log.

Tip: After you have configured a network deployment environment, if you test the data store connection (for example, in the administrative console, on the page **Resources** > **JDBC** > **Data sources**), you get a message saying that the test connection operation failed with the exception `com.ibm.wsspi.runtime.variable.UndefinedVariableException: Undefined Variable WAS_INSTALL_ROOT`. This does not necessarily indicate that there will be a problem accessing the data source at run time. Ensure that the location of your JDBC driver files is accessible to every client that must use the data source, and configure the variable with the full path of that location. Disregard the test connection error unless you are also experiencing trouble connecting to the data store at run time. For additional information, see the WebSphere Application Server documentation about the test connection service.

Important: If you use additional servers with unique ports, WebSphere Application Server does not automatically configure the virtual host for the server. Specifically, WebSphere Application Server does not automatically add the host alias ports to a virtual host. However, you can use the administrative console to add a new host alias for each of the ports that are used by the new server. For more information, see the WebSphere Application Server documentation about configuring virtual hosts.

Related concepts:

➡ Virtual hosts

Related tasks:

➡ Configuring virtual hosts

Related reference:

➡ Test connection service

Configuring profiles and creating a network deployment environment:

After you install the product, you must create or augment a deployment manager and one or more custom profiles to define the runtime environment. Before starting the deployment manager, you must have configured the databases that are to be used with IBM Business Process Manager.

Creating or augmenting network deployment profiles:

If you used the **configureNode** command to create and configure your deployment environment, no further configuration is required. Otherwise, you must create or augment a deployment manager profile and one or more custom profiles before creating the deployment environment. Using profiles, you can have more than one runtime environment on a system, without having to install multiple copies of IBM Business Process Manager.

Configuring a network deployment environment with a DB2 database server:

You can configure a network deployment environment for IBM Business Process Manager using a DB2 database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

* Log into the Windows system as a local system user to create a profile.
* Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: | Vista | Windows 7

* To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  ```
  runas /user:MyAdminName /env pmt.bat
  ```

  Non-administrative users are prompted for the administrator password.
* If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

* Specify a database design file to be used for the database configuration.
* Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).

- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin****ProfileManagement****pmt.bat**

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        - In the **Path** field, enter the directory path to the existing certificate.
        - In the **Password** field, enter the password for the certificate
        - In the **Keystore type** field, select the keystore type for the certificate you are importing.
        - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        - Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.
11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.
12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root\properties\portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

   If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

   Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

   During profile deletion, you can remove the Windows service that is added during profile creation.

   IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
      Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with a DB2 database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

- Log into the Windows system as a local system user to create a profile.

- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: **Vista** Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

runas /user:MyAdminName /env pmt.bat

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin****ProfileManagement****pmt.bat**
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
  5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
  6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. On the Process Server Configuration page, set the values for the following parameters.

    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.

    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.
      - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.

    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.

    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create a deployment manager profile.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

- Log into the Windows system as a local system user to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:

   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.

- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   `manageprofiles.bat -create -templatePath `*`install_root`*`/profileTemplates/BPM/dmgr.procctr`

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   `manageprofiles.bat -response `*`myResponseFile`*

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with a DB2 database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

- Log into the Windows system as a local system user to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root``\java\bin\java -Duser.language=`*`locale`* *`install_root`*`\bin\ProfileManagement\startup.jar`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root``\java\bin\java -Duser.language=de `*`install_root`*`\bin\ProfileManagement\startup.jar`

Restrictions: Vista Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  ```
  runas /user:MyAdminName /env pmt.bat
  ```

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root*\bin\ProfileManagement\pmt.bat
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
     - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
     - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
     - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
  7. If you selected **Typical** profile creation, skip to the Administrative Security step.

8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.
11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root\properties\portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with a DB2 database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:

- Log into the Windows system as a local system user to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -D*user.language=locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: `Vista` `Windows 7`

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin****ProfileManagement****pmt.bat**
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
     - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.

- The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

- Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root\properties\portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the `startServer` or `startManager` commands. For example, if you configure a server as a Windows service and issue the `startServer` command, the `wasservice` command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

16. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Profile Summary step.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

If you installed BPM in a Windows domain controller environment and installed DB2 Express as part of installation, profile creation will fail because you cannot use the domain user ID to create a new database and tables. Before creating a profile, use one of the following solutions:
- Log into the Windows system as a local system user to create a profile.
- Follow the steps listed in DB2 log file error: SQL1092N "USERID does not have the authority to perform the requested command or operation" before creating a profile.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:
   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions

are installed in your environment. Make sure that you specify the fully qualified file path for
-templatePath, because a relative file path for the **-templatePath** parameter results in the specified
profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM
directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response
   file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example
   'personalCertValidityPeriod=1 ' or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an
   appropriate response file based on the type of profile (stand-alone or network, Process Center or
   Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process
     Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process
     Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager
     Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process
     Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager
     Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced
     Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager
     Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced
     Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Edit the parameters in the response
   file as appropriate to your configuration and save the edited response file. Make sure that the
   templatePath property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

   ```
   manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   -profileName MyProfileName
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters.
   For example:

   ```
   manageprofiles.bat -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax
   checking on the response file applies as the file is parsed like any other response file. Individual
   values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure
  the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom
profile. A custom profile contains an empty node that you must federate into a deployment manager cell
to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: **Vista**   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  runas /user:MyAdminName /env pmt.bat

  Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
  2. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin\ProfileManagement\pmt.bat**
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
  6. If you selected **Typical** profile creation, skip to the Federation step.
  7. Advanced: On the Profile Name and Location page, perform the following steps:

a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root\profiles\profile_name`.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

Processing associated with federating the node as part of custom profile creation:

- The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
- If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
   - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
     – In the **Path** field, enter the directory path to the existing certificate.
     – In the **Password** field, enter the password for the certificate
     – In the **Keystore type** field, select the keystore type for the certificate you are importing.
     – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
     – Click **Next** to display the Security Certificate (Part 2) page

   When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

   When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

   - `key.p12`: Contains the default personal certificate.
   - `trust.p12`: Contains the signer certificate from the default root certificate.
   - `root-key.p12`: Contains the root signing certificate.
   - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
   - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
   - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

   These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones.

If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root\properties\portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

runas /env /user:MyAdminName "**manageprofiles.bat -response** *myResponseFile*"

Non-administrative users are prompted for the administrator password.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available for custom profiles:

   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.
3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   manageprofiles.bat -create -templatePath *install_root*/profileTemplates/BPM/managed.procctr

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   manageprofiles.bat -response *myResponseFile*

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale* *install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: **Vista**   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  ```
  runas /user:MyAdminName /env pmt.bat
  ```

  Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.

2. Use one of the following methods to start the Profile Management Tool.

   - Start the tool from the First steps console.
   - Run the command *install_root***bin****ProfileManagement****pmt.bat**

3. Shut down any servers associated with a profile you plan to augment.

4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:
    a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
    b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.
    c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

       When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
    d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
    e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    - In the **Server name** field, enter a name for the server or accept the default value.
    - In the **Host name** field, enter a name for the host or accept the default value.
    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.
11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

    Important:

    Select **Federate this node later** if any one of the following situations is true:
    - You plan to use this custom node as a migration target.
    - Another profile is being federated. (Node federation must be serialized.)
    - The deployment manager is not running or you are not sure if it is running.
    - The deployment manager has the SOAP connector disabled
    - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
    - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
    - The deployment manager does not have a JMX administrative port enabled.

- The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.
12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.
13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12`

file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.

    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root\properties\portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root\bin* directory:

`runas /env /user:MyAdminName "`**manageprofiles.bat -response** *myResponseFile*`"`

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

   ```
   manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
   -profileName MyProfileName
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

  ```
  profile_root\bin\startManager.bat
  ```
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

   ```
   profile_root\bin
   ```

2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

   ```
   addNode.bat deployment_manager_host deployment_manager_SOAP_port
   ```

   Run the following command from the command line if security is enabled:

   ```
   addNode.bat deployment_manager_host deployment_manager_SOAP_port -username
   userID_for_authentication -password password_for_authentication
   ```

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

   ```
   ADMU0003I: Node DMNDID2Node03 has been successfully federated.
   ```

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

⏩ Add managed nodes (WebSphere Application Server)

Configuring a network deployment environment with a DB2 for z/OS database server:

You can configure a network deployment environment for IBM Business Process Manager using a DB2 Universal Database for z/OS database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles with a DB2 for z/OS database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar`

Restrictions: **Vista** Windows 7
- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

`runas /user:MyAdminName /env pmt.bat`

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***\bin\ProfileManagement\pmt.bat**
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose **Advanced** and click **Next**.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root\properties\portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is Manual). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with a DB2 for z/OS database server using the Profile Management Tool on Linux:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: � **Vista** ▪ Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user

or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin\ProfileManagement\pmt.bat**
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
5. On the Profile Creation Options page, choose **Advanced** and click **Next**.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

  Click **Next**.
9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.
11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root\properties\portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.

- Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
- Select **Test** if the server is to be used as a testing environment, for example, for load testing.

Restriction: Do not mix production and non-production servers in the same cell.
Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:

- **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.
15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.
- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.
1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:

- `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
- `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   `manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr`

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   `manageprofiles.bat -response myResponseFile`

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with a DB2 for z/OS database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista** Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin****ProfileManagement****pmt.bat**
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.

- The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

7. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

8. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

9. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

10. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

11. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

12. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

13. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root\properties\portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

14. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is Manual). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with a DB2 for z/OS database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: Vista   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

  ```
  runas /user:MyAdminName /env pmt.bat
  ```

  Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

To use a DB2 for z/OS database, you must choose **Advanced** profile creation and specify a database design file.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin\ProfileManagement\pmt.bat**
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose **Advanced** and click **Next**.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
8. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

9. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

10. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

11. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

12. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.

- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

13. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

14. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services

Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable

IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

15. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.
16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.
- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:

   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.

- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

  Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

   ```
   manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   -profileName MyProfileName
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.bat -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Run the scripts to create and configure the DB2 for z/OS database.
- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista**   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

  ```
  runas /user:MyAdminName /env pmt.bat
  ```

  Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have

access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.

2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Click *Linux_operating_system_menus_to_access_programs* > IBM > *your_product* > Profile Management Tool.
   - Run the command *install_root*/bin/ProfileManagement/pmt.sh.

3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

6. If you selected **Typical** profile creation, skip to the Federation step.

7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.

- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root\properties\portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista** Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*\bin\ProfileManagement\pmt.bat
3. Shut down any servers associated with a profile you plan to augment.
4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
8. If you selected **Typical** profile creation, skip to the Federation step.
9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

    Important:

    Select **Federate this node later** if any one of the following situations is true:
    - You plan to use this custom node as a migration target.
    - Another profile is being federated. (Node federation must be serialized.)
    - The deployment manager is not running or you are not sure if it is running.
    - The deployment manager has the SOAP connector disabled
    - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
    - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
    - The deployment manager does not have a JMX administrative port enabled.
    - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

    Processing associated with federating the node as part of custom profile creation:
    - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
    - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root\properties\portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.
5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

   ```
   manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
   -profileName MyProfileName
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.bat -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

   profile_root\bin\startManager.bat
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.

- You do not plan to use this custom node as a migration target.
1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

    profile_root\bin

2. Run the **addNode** command.

    Run the following command from the command line if security is not enabled:

    addNode.bat *deployment_manager_host deployment_manager_SOAP_port*

    Run the following command from the command line if security is enabled:

    addNode.bat *deployment_manager_host deployment_manager_SOAP_port* -username
    userID_for_authentication -password *password_for_authentication*

    An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

    ADMU0003I: Node DMNDID2Node03 has been successfully federated.

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

⯈ Add managed nodes (WebSphere Application Server)

Creating and configuring DB2 for z/OS databases after network deployment profile creation:

After creating or augmenting profiles, you or your database administrator must create the databases and their tables manually, and you must also run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

DB2 for z/OS authorization prerequisites:

Before you create the IBM Business Process Manager databases, you must ensure that the required authorizations are granted for your DB2 for z/OS version. Also ensure that the appropriate storage groups and buffer pools are assigned, and configure clustering if necessary.

User authorization requirements for DB2 for z/OS

Ask your DB2 for z/OS system administrator to check the authorizations that have been granted to ensure that you have not granted more authority than necessary to any user ID. It can be tempting to grant DB2 SYSADM authority to the JCA authentication aliases in order to avoid possible problems with DB2 security during the configuration. The WebSphere administrator ID should not require more than DBADM authority to define the IBM Business Process Manager databases.

The following storage group, database, and buffer pool GRANT permissions are provided by default, for the WebSphere administrator identified as *#DB_USER#*. These permissions are available in the `createDatabase.sql` database script that is generated by the database design tool:

GRANT USE OF STOGROUP *#STOGRP#* TO *#DB_USER#* WITH GRANT OPTION;
GRANT DBADM ON DATABASE *#DB_NAME#* TO *#DB_USER#*;
GRANT USE OF ALL BUFFERPOOLS TO *#DB_USER#*;

The following GRANT permission might be required to permit the *#DB_USER#* user to create sequences and stored procedures with a schema qualifier of *#SCHEMA#*:

GRANT CREATEIN,ALTERIN,DROPIN ON SCHEMA *#SCHEMA#* TO *#DB_USER#* WITH GRANT OPTION;

The following permissions are also required:

```
GRANT CREATE ON COLLECTION #SCHEMA# TO #DB_USER#;
GRANT BINDADD TO #DB_USER#;
```

Authorization requirements for views on DB2 for z/OS V10

If you are planning to use DB2 for z/OS V10, additional permissions are required for views in the database:

- Before you run the SQL to define views, you might need to set the DBACRVW subsystem parameter to YES.

  This setting ensures that WebSphere administrator IDs with DBADM authority on database #DB_NAME# can create views for other user IDs.

- On DB2 for z/OS V10, the WebSphere administrator ID must be specifically granted access to views, because access is not implicitly granted to users with DBADM authority on the database. Individual GRANT statements or a Resource Access Control Facility (RACF) group can be used to provide access to views in DB2 for z/OS V10. Ask your DB2 for z/OS administrator to provide this access by using either of the following methods:

  - Issue an explicit GRANT statement for each view. For example, the following sample GRANT statements can be issued for user ID WSADMIN:

    ```
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ACTIVITY_SERVICE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.APPLICATION_COMP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.AUDIT_LOG_B TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.BUSINESS_CATEGORY_LDESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_CPROP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESCALATION_DESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.ESC_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.EVENT TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.MIGRATION_FRONT TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_ATTRIBUTE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_INSTANCE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPLATE TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.PROCESS_TEMPL_ATTR TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROPERTY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.QUERY_PROP_TEMPL TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.SHARED_WORK_ITEM TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_AUDIT_LOG TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_CPROP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_DESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_HISTORY TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_CPROP TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.TASK_TEMPL_DESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_DIST_TARGET TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_BASKET_LDESC TO WSADMIN WITH GRANT OPTION;
    GRANT DELETE,INSERT,SELECT,UPDATE ON TABLE S1CELL.WORK_ITEM TO WSADMIN WITH GRANT OPTION;
    ```

  - Define a RACF group that corresponds to the schema name for the views, and connect the WebSphere administrator ID to the RACF group. For example, you can define a RACF group named S1CELL, and connect user WSADMIN to it, as follows:

    ```
    INFORMATION FOR GROUP S1CELL
     SUPERIOR GROUP=ZWPS   OWNER=ZWPS   CREATED=07.144
     INSTALLATION DATA=OWNED BY EMP SERIAL 009179, SITE ABCUK
     NO MODEL DATA SET
    ```

```
TERMUACC
NO SUBGROUPS
USER(S)= ACCESS= ACCESS COUNT= UNIVERSAL ACCESS=
  WSADMIN  CONNECT  000000    NONE
   CONNECT ATTRIBUTES=NONE
   REVOKE DATE=NONE     RESUME DATE=NONE
```

Using the configuration planning spreadsheet to define authorizations

If you have downloaded the configuration planning spreadsheet for use, you can alternatively use this spreadsheet to generate the GRANT permissions that are required for users and for DB2 for z/OS V10 views (as identified in the preceding sections in this topic). The configuration planning spreadsheet is available from Techdoc WP102075 in the IBM Support Portal.

The Database worksheet in the spreadsheet lists a set of sample SQL statements that can be used to create the databases and storage groups. Additionally, the GRANT permissions that are required to authorize the WebSphere administrator and to provide access to DB2 for z/OS V10 database tables are provided. When you specify the user and database object names on the BPMVariables worksheet of the spreadsheet, these values are propagated to the Database worksheet, and are used to complete the CREATE and GRANT statements with the appropriate values.

Ask your DB2 for z/OS system administrator to use the relevant CREATE statements to create the databases and storage groups, and to use the GRANT statements to authorize the WebSphere administrator. For more information about using the artifacts generated from the spreadsheet, see the accompanying PDF document in the Techdoc.

Storage group assignments and buffer pool usage

Ask your DB2 for z/OS system administrator to check the storage group assignments and buffer pool usage. Incorrect storage group assignment and buffer pool usage might not show up as an error message in a log, but might cause problems later. It is better to resolve such problems now rather than when the system has been handed over for use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.

Clustering requirements

If you intend to configure clustering, your DB2 for z/OS system must be running in data-sharing mode.

Related tasks:

"Creating database design files and database scripts (AIX stand-alone)" on page 493
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (AIX network deployment)" on page 614
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux stand-alone)" on page 155
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Linux network deployment)" on page 277
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris stand-alone)" on page 826
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Solaris network deployment)" on page 949
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating database design files and database scripts (Windows stand-alone)" on page 1176
Use the database design tool to generate a design file that is used when creating a stand-alone profile. The database design tool also generates database scripts that you can use to create your database tables.

"Creating database design files and database scripts (Windows network deployment)" on page 1304
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating databases in the DB2 for z/OS subsystem:

When you use the database design tool (**DbDesignGenerator**) to define your database configuration, you can generate the database scripts that are required for creating the databases for the IBM Business Process Manager components.

You can use various tools to run these database scripts:
- When you run the database design tool to generate the database scripts, the **createDB2.sh** script is also generated. You can use **createDB2.sh** to run the database scripts.
- You can use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to run the database scripts.

Choosing which tool to use

You can choose one tool over another based on experience and familiarity, or personal preference. Your organization might also have implemented standards or conventions for the tools used to create DB2 for z/OS objects, particularly in a production environment.

Considerations for choosing the createDB2.sh script

- **createDB2.sh** can create all your database objects in one simple execution of the tool, so it is a good choice if this is your first server implementation.
- **createDB2.sh** runs the database scripts that the database design tool (**DbDesignGenerator**) generates.
- **createDB2.sh** runs the SQL for each component in the correct sequence.
- **createDB2.sh** creates database objects according to a naming convention that you define.
- **createDB2.sh** organizes the layout of database objects across DB2 for z/OS databases.
- **createDB2.sh** issues GRANT permissions to database, storage group, and buffer pool objects.
- **createDB2.sh** automatically completes customization of the service integration bus Data Definition Language (DDL).
- **createDB2.sh** runs in a UNIX System Services environment.
- **createDB2.sh** produces an audit trail of the objects that it creates.

Considerations for choosing other tools

- You might prefer to use the DB2 command line processor to run the SQL statements in the UNIX Systems Services environment. You must first run the **createDB2.sh** script in a mode that bypasses execution of the SQL statements and instead consolidates them into two `.sql` files. You can then run these files by using the command line processor.
- There is no restriction on the naming or organization conventions that apply to the database objects other than the standard database subsystem restrictions.
- Some tools can be run from a z/OS environment.
- The tools can produce an audit trail of the DB2 database commands that have been issued.

Related tasks:

"Creating database design files and database scripts (Windows network deployment)" on page 1304
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Configuring the DB2 command line processor:

Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

Ensure that a properties file, for example, `clp.properties`, exists for the DB2 command line processor. If required, you can create your own properties file by using the sample properties file that is available in the directory where the command line processor is installed. For more information, see your DB2 for z/OS documentation.

Complete the following configuration steps in the z/OS UNIX System Services environment from which the **createDB2.sh** script will be run:

1. Configure the DB2 command line processor for each user ID that will work with DB2 for z/OS from the command line. You can update the personal or shared user profiles as follows:
   - Modify the CLASSPATH environment variable to include the `clp.jar` file.
   - Use the CLPPROPERTIESFILE environment variable to define the fully qualified name of the properties file for the command line processor.
   - Define the **db2** command as an alias for the command that starts the command line processor.
   - Specify the `DB2JccConfiguration.properties` file that defines the JDBC properties to be applied to the command line processor.

   You can use the following syntax to add the required entries to the `.profile` or `/etc/profile` file:

```
export CLPHOME=clp_install_dir
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=clp_properties_file_path
alias db2="java -Ddb2.jcc.propertiesFile=
/file_path/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

For example:

```
export CLPHOME=/shared/db2910_base
export CLASSPATH=$CLASSPATH:$CLPHOME/lib/clp.jar
export CLPPROPERTIESFILE=/wasv8config/clp.properties
alias db2="java -Ddb2.jcc.propertiesFile=
/wasv8config/DB2JccConfiguration.properties com.ibm.db2.clp.db2"
```

2. In the properties file for the command line processor, define alias names that can be used to connect to the DB2 for z/OS server. An alias name definition includes the following entities:

   • A URL that specifies the domain name or IP address of the database server, the port on which the server listens, the DB2 location name defined during installation, and the property for the JDBC connection. The URL can take the form: *server:port/database* property=*value*. The port and property values are optional, and the DB2 location name must be specified in uppercase characters.

   • A user ID and an associated password that can be used to connect to the DB2 server. This user ID should correspond to the user ID (with SYSADM authority) that the DB2 system administrator uses to run the **createDB2.sh** script.

   You can add the required alias name entries to the properties file by using the following syntax:

   ```
   DB2ALIASNAME=URL,user_ID,password
   ```

   For example:

   ```
   DSNXWBD=localhost:9446/DSNXWBD,SYSADM1,SYSPWRD1
   ```

   Tip: When you define a *DB2ALIASNAME* value in the properties file, ensure that the correct connection details are specified to avoid connecting to the wrong database and inadvertently overwriting its contents.

3. Configure the DB2 DBACRVW subsystem parameter to enable user IDs with DBADM authority on a database to perform the following tasks for other user IDs: create views on tables in the database, create aliases for tables, and create materialized query tables. You can use the installation Command List (CLIST) to access the DSNTIPP ISPF panel and update the DBADM CREATE AUTH field to set DB2 ZPARM DBACRVW=YES.

Use the **createDB2.sh** script to either run the SQL to create the database objects for a specified database, or to consolidate the SQL statements into two .sql files that you can run later using other database tools.

Related tasks:

"Creating DB2 for z/OS database objects using the createDB2.sh script"
After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 1410
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating DB2 for z/OS database objects using the createDB2.sh script:

After creating the database scripts for the IBM Business Process Manager components, you can run the **createDB2.sh** script to create one or more databases in the DB2 for z/OS subsystem and populate each database with objects.

You can also use tools such as the DB2 command line processor, SPUFI, or DSNTEP2 to create and populate databases.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a network deployment environment, you might define two DB2 for z/OS databases, where one database is used for the Common database component, which is cell-scoped, and another database is used for all the other components, which are cluster-scoped.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

The number of databases that you create for your IBM Business Process Manager installation can depend on your topology, and how you want to distribute your database objects across the DB2 for z/OS subsystem. Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created. For example:

- To create a single database, you can run **createDB2.sh** once from a directory that contains all the database scripts that were generated for all the IBM Business Process Manager components.
- To create multiple databases at the cell level and cluster levels, you can run **createDB2.sh** once from each directory that contains the database scripts required to create the database objects for the cell and clusters.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   cd /u/work/S4CELLDB

2. Run the **createDB2.sh** script by using the following syntax:

   createDB2.sh -DBAlias *alias_name* -DBName *database_name* -DBSto *storage_group_name* -DBCreate -DBVCat *volume_catalog* -DBUser *DB_user_ID* -RunSQL

   where:

   -DBAlias
   Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

-DBName
> Specifies the name of the database to be created.

-DBSto
> Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

-DBCreate
> Creates the database.

-DBVCat
> Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser
> Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

-RunSQL
> Runs the SQL statements that create the database objects.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN -RunSQL
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

3. Review the messages that are displayed in the console, checking that no error messages are displayed.

Tip: The first time that you run **createDB2.sh** to create the database, you see a few messages because the script first attempts to drop the database, which at that stage does not yet exist. These messages can be ignored, and subsequent invocations of **createDB2.sh** for the same database will not produce such messages.

When the script has finished running, you can also review the z_output.txt file, which provides an audit trail of the operations completed and status messages. This file is stored in the directory from which you ran the **createDB2.sh** script.

Each database is created and populated with the required database objects.

Related tasks:

"Configuring the DB2 command line processor" on page 1407
Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

"Creating database design files and database scripts (Windows network deployment)" on page 1304
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using the DB2 command line processor:

When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

You can also run these .sql files by using any other database tool of your choice, such as SPUFI or DSNTEP2.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a network deployment environment, you might define two DB2 for z/OS databases, where one database is used for the Common database component, which is cell-scoped, and another database is used for all the other components, which are cluster-scoped.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.
- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, including the **createDB2.sh** script, which are required to create the database, into that directory.
- Use FTP to transfer the database scripts, including the **createDB2.sh** script, to the z/OS system that contains the DB2 for z/OS installation. Transfer the **createDB2.sh** script as an ASCII text file, and transfer the database schema files in binary mode. Also ensure that you retain the directory structure when you transfer the files.
- Grant execute permissions to the **createDB2.sh** script.
- Create or augment the profile.
- Configure the DB2 command line processor.

Provided that the database scripts are grouped appropriately in the output directories that were specified when you ran the database design tool, you can run the **createDB2.sh** script once for each instance of a database to be created.

Important: It is anticipated that the DB2 for z/OS system administrator will run the **createDB2.sh** script with a user ID that has SYSADM authority, to create the databases and storage groups. On completion, the system administrator can then grant DBADM authority for the IBM Business Process Manager databases to the WebSphere administrator.

Complete the following steps for each database that you want to create:

1. In the z/OS system that contains the DB2 installation, access the UNIX System Services command shell and then change to the directory to which you transferred the database scripts for the database objects to be created. For example:

   ```
   cd /u/work/S4CELLDB
   ```

2. Run the **createDB2.sh** script by using the following syntax:

   ```
   createDB2.sh -DBAlias alias_name -DBName database_name -DBSto storage_group_name -DBCreate
   -DBVCat volume_catalog -DBUser DB_user_ID
   ```

   where:

   -DBAlias
     Specifies an alias name, which maps to the DB2 server URL, user ID, and password, and which is used to connect to DB2. If you do not specify this parameter when you run the **createDB2.sh** script, you are prompted for a value.

   -DBName
     Specifies the name of the database to be created.

   -DBSto
     Specifies the storage group name for the volumes that hold the data sets where tables and indexes are stored.

   -DBCreate
     Creates the database.

-DBVCat
> Specifies the name of the DB2 Virtual Storage Access Method (VSAM) catalog that records information about the data sets.

-DBUser
> Specifies the user ID of the WebSphere administrator that has database administration authority for the IBM Business Process Manager database being created.

Tip: By omitting the **-RunSQL** parameter, you bypass the execution of the SQL statements that create the database objects, and instead consolidate the statements into two .sql files.

For example:

```
createDB2.sh -DBAlias DSNXWBD -DBName S4CELLDB -DBSto S4DBSTO -DBCreate -DBVCat DSNV10PP
-DBUser S4ADMIN
```

For information about all the parameters that are available for the **createDB2.sh** script and example usage, see createDB2.sh script.

The z_schema.sql and z_schemaProc.sql files, which hold the consolidated SQL statements, are generated in the directory from which you ran the **createDB2.sh** script. The z_schemaProc.sql file contains SQL statements for stored procedures, and is generated in addition to z_schema.sql because stored procedures require the "at" sign (@) as a statement termination character when running the command line processor.

3. Run the DB2 command line processor in batch mode to execute the SQL in the z_schema.sql file:

   ```
   db2 -f /createDB2.sh_path/z_schema.sql
   ```

   For example:

   ```
   db2 -f /u/work/S4CELLDB/z_schema.sql
   ```
   The command line processor reads the data in the file, and processes the commands in the file consecutively.

4. Run the DB2 command line processor again to execute the SQL in the z_schemaProc.sql file, and additionally use the **-td** parameter to define @ as the statement termination character:

   ```
   db2 -td@ -f /createDB2.sh_path/z_schemaProc.sql
   ```

   For example:

   ```
   db2 -td@ -f /u/work/S4CELLDB/z_schemaProc.sql
   ```

Each database is created and populated with the required database objects.

Related tasks:

Before you run the **createDB2.sh** script, you must configure the DB2 command line processor by defining a set of environment variables and a **db2** command alias. You must also define alias names that can be used to connect to the DB2 for z/OS server.

You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Creating DB2 for z/OS database objects using SPUFI or DSNTEP2:

You can use tools such as SPUFI or DSNTEP2 to run the database scripts that are used to create the DB2 for z/OS database objects for your configuration.

- Decide on the DB2 for z/OS database design and configuration, including the number of databases required for the IBM Business Process Manager components. For example, in a stand-alone server environment, you might decide to set up all the component databases in a single DB2 for z/OS database.
- Decide on a naming convention for the DB2 for z/OS objects, such as databases, storage groups, VSAM catalog names (VCATs), schema prefixes, buffer pools, and security IDs.

- Create the required buffer pools. For more information, see Sample DB2 commands and SQL.
- Run the database design tool (**DbDesignGenerator**) to generate the database scripts that can be used to create the database objects for the IBM Business Process Manager components. Set up your database configuration so that the database design tool creates a single output directory for each database to be created, and generates all the relevant database scripts, which are required to create the database, into that directory.

  Tip: The generated scripts that you use to create the database objects can either be in ASCII or EBCDIC format. Typically, the generated `.sql` files are in ASCII format, and the equivalent `.ddl` files are in EBCDIC format.
- Use FTP to transfer the database scripts to the z/OS system that contains the DB2 for z/OS installation.
- Create or augment the profile.

You can create the database objects by using the tool of your choice. For example:

SPUFI A utility that runs SQL scripts from z/OS. SPUFI uses EBCDIC input.

DSNTEP2
      A sample dynamic SQL program provided with the DB2 for z/OS product.

1. Assign the appropriate read permissions to the SQL scripts; for example:
   ```
   chmod 644 createTable_AppScheduler.sql
   ```
2. If the tool that you want to use to view, edit, and run the scripts requires the scripts to be in EBCDIC format, rather than ASCII format, use the **iconv** command to convert the files to EBCDIC. For example:
   ```
   iconv –t IBM-1047 –f ISO8859-1 createTable_AppScheduler.sql >
   createTable_AppScheduler_EBCDIC.sql
   ```

   Important: After converting from ASCII to EBCDIC, check that no SQL statements exceed 71 characters in length. Longer lines will lead to line truncation and invalid statements when copying to fixed-width MVS data sets.

   Tip: If you have converted the files from ASCII format to EBCDIC, but need to run the files in ASCII format, you can also use **iconv** to convert the files back to ASCII. For example:
   ```
   iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >
   createTable_AppScheduler.sql
   ```
3. Edit the values in the `createDatabase.sql` and `dropDatabase.sql` files according to your requirements. The following symbolic variables need to be updated:
   ```
   @STOGRP@      = DB2 Storage group name
   @DB_NAME@     = DB2 Database name
   @SCHEMA@      = DB2 SQLID (Schema Qualifier)
   @BPTABLE4K@ = Buffer Pool of 4k Size
   @BPINDEX@     = Buffer Pool Index
   @VOLUMES@     = DB2 comma separated list of volume-ids
   @VCAT@        = DB2 integrated catalog facility name
   @DB_USER@     = The user ID which will be used to create the database objects
   ```
4. To create database objects outside of the z/OS UNIX environment by using SPUFI or DSNTEP2, copy the customized database scripts from z/OS UNIX to a partitioned data set.
5. Run the customized scripts by using the tool of your choice.

   Tip: If you previously ran the **createDB2.sh** script and chose to bypass execution of the SQL scripts, you can also run the consolidated SQL files (`z_schema.sql` and `z_schemaProc.sql`), which were generated.
6. Verify that the database tables are created successfully with no errors by inspecting the output.

Related tasks:

"Creating database design files and database scripts (Windows network deployment)" on page 1304
You can specify the design of your database configuration by using the database design tool. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

"Creating DB2 for z/OS database objects using the DB2 command line processor" on page 1410
When you run the **createDB2.sh** script, you can choose to execute the SQL immediately to create the database objects for the specified database, or you can bypass execution of the SQL scripts so that you can run them later. If you bypass execution of the SQL, the **createDB2.sh** script consolidates the SQL statements into two files (z_schema.sql and z_schemaProc.sql) that you can run later by using the DB2 command line processor.

Creating the messaging engine data stores:

If the messaging engine data stores have not already been created, use the database design tool to generate the database scripts that the database administrator will use to create the tables for the messaging engine data stores.

Before you create and run the database scripts:
- Create a cluster.
- Decide which service integration bus components you want to create in your network deployment configuration.

You must create and populate a messaging engine data source for each of the following components that you configure:
- Service Component Architecture system bus
- Service Component Architecture application bus
- Process Server
- Performance Data Warehouse
- Common Event Infrastructure

You can create all the database objects in one or more databases in the DB2 for z/OS subsystem. Take note of the following considerations:
- All messaging engines use the same table names. Therefore, the tables for each messaging engine require a unique schema qualifier.
- When you use the database design tool to define the database configuration for each messaging engine, you can specify a prefix for table space names:
  - If you intend to use a single database for all the messaging engines, specify a unique table space prefix for each messaging engine to make its table space name unique within the database.
  - If you intend to use a separate database for each messaging engine, the table space prefixes that you specify for the messaging engines can be identical or unique.

1. For each messaging engine, complete the following steps to generate the required database scripts:
   a. Run the database design tool (**DbDesignGenerator**) from the *install_root*/util/dbUtils directory.
   b. Select option **(2)Create a database design for a single component**, and then select the appropriate option for the messaging engine.
   c. Complete the remaining prompts in the tool to define the database configuration and to generate the scripts.

   Tip: As an alternative to running the database design tool multiple times to generate scripts for each of the messaging engines, you can run the tool once using option **(1)Create a database design for Standalone profile or Deployment Environment**. With this option, you can define the database configuration and generate database scripts for the following components in a single pass through the

tool: Common database, Business Process Choreographer, Performance Data Warehouse, Process Server, Business Space, and the six messaging engines.

2. Run the generated DDL scripts using the tool of your choice.

The messaging engine data stores are created.

Related tasks:

"Creating database design files and database scripts for a specific component with DB2 for z/OS in a network deployment environment" on page 1310
You can use the database design tool to generate a design file, and optionally database scripts, for the database tables required by specific IBM Business Process Manager components.

"Creating database design files and database scripts for deployment environments with DB2 for z/OS" on page 1304
Use the database design tool to generate a design file that is used to configure your databases when creating a deployment manager profile, or when using the deployment environment wizard. The database design tool also generates database scripts that you can use to create your database tables.

Granting table privileges to the JCA authentication alias user ID:

If the schema name you are using is not the same as the JCA authentication alias user ID, you must grant a subset of DB2 for z/OS privileges to the JCA authentication alias user ID.

The database scripts for the service integration bus (SIB) contain commented GRANT commands that you can use as a basis for granting access to the SIB tables. However, the other IBM Business Process Manager components do not supply GRANT statements.

Use a schema name that is different from the JCA authentication alias to prevent the alias user ID from having the authority to drop tables. (The authority to drop tables is implicitly granted to the creator, that is, the schema.) Note that it does not make sense to grant a privilege like DBADM to the JCA authentication alias user ID because DBADM also has the ability to drop tables.

If you want IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the database scripts and editing them to construct GRANT commands from the CREATE commands. You can create GRANT commands like the one shown in the following example:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

where *userid/sqlid* is the JCA authentication alias user ID.

Note: Typically, the creator of a database object has implicit use of that object without requiring additional GRANT permissions. However, for DB2 for z/OS Version 10, additional GRANT permissions might be required for views because access to views is not implicitly granted to the creator.

Setting the correct schema name for the messaging engines:

To ensure that the service integration bus (SIB) messaging engines can access the appropriate DB2 for z/OS tables, the correct schema name must be set for the messaging engines. You can use the administrative console to change the schema names.

Start the server.

1. Log in to the administrative console.
2. Navigate to **Service Integration** > **Buses**.
3. For each messaging engine:
   a. Select **Messaging engines**, and then click the name that is displayed.

b. Click **Message store**.

   c. Change the value of **Schema name** to the name used when creating the DB2 for z/OS tables for this messaging engine.

   d. Click **Apply**.

   e. Save your configuration changes.

4. Verify that the messaging engines can be started:

   a. Log out of the administrative console.

   b. Stop, and then restart the server.

   c. Look in the output of the server log for successful SIB messaging engine startup messages. For example:

   ```
   BBOO0222I: "BusName"
   CWSID0016I: Messaging engine MessagingEngineName is in state Started.
   ```

Configuring a network deployment environment with an Oracle database server:

You can configure a network deployment environment for IBM Business Process Manager using an Oracle database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: **Vista**   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

   runas /user:MyAdminName /env pmt.bat

   Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have

access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin\ProfileManagement\pmt.bat**

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.

- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate
      - In the **Keystore type** field, select the keystore type for the certificate you are importing.
      - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      - Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root\properties\portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista**   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

  Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:
- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.
  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin\ProfileManagement\pmt.bat**
  2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  3. On the **Profiles** tab, click **Create**.

     The Environment Selection page opens in a separate window.
  4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

    a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

    b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

    c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

       When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

    d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

    e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

    • In the **Server name** field, enter a name for the server or accept the default value.

    • In the **Host name** field, enter a name for the host or accept the default value.

    • In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    • To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    • To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

       – In the **Path** field, enter the directory path to the existing certificate.

       – In the **Password** field, enter the password for the certificate

       – In the **Keystore type** field, select the keystore type for the certificate you are importing.

       – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

       – Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root\properties\portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is Manual). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.
      - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.

- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Profile Summary step.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:
   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.

- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with an Oracle database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista** Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root`\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin\ProfileManagement\pmt.bat**
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
     - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
     - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
     - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
  7. If you selected **Typical** profile creation, skip to the Administrative Security step.
  8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
  9. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root\profiles\profile_name`.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

   - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

   When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by

default. The default keystore password for the root signing certificate is WebAS. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the java.security file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- key.p12: Contains the default personal certificate.
- trust.p12: Contains the signer certificate from the default root certificate.
- root-key.p12: Contains the root signing certificate.
- default-signers.p12: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- deleted.p12: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- ltpa.jceks: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the key.p12 file or the root-key.p12 file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root\properties\portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is Manual). The user ID

must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
> Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with an Oracle database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

`install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar`

For example, to start the Profile Management Tool in the German language, enter the following command:

`install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar`

Restrictions: **Vista** Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

`runas /user:MyAdminName /env pmt.bat`

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a

`com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the
install_root`\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have
access to the `Program Files` directory, which is the default installation location for the product. To
resolve this issue, nonadministrative users must either install the product by themselves or be given
permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced**
profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node,
  host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user
  account permit the creation of services.

  1. Use one of the following methods to start the Profile Management Tool.
     - Start the tool from the First steps console.
     - Run the command *install_root***bin****ProfileManagement****pmt.bat**
  2. Shut down any servers associated with a profile you plan to augment.
  3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management
     Tool** tab.
  4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment
     a WebSphere Application Server profile, it must be from the version of WebSphere Application
     Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected
     unless a profile can be augmented. The Augment Selection page opens in a separate window.
  5. On the Augment Selection page, select the type of augmentation you want to apply to the profile.
     Then click **Next**.
  6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile
     augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following
     conditions occur:

     - The profile you selected to augment has a running server. You cannot augment the profile until
       you stop the server or click **Back** and choose another profile that does not have running servers.
     - The profile you selected to augment is federated. You cannot augment a federated profile. You
       must click **Back** and choose another profile that is not federated.
     - The profile you selected to augment is already augmented with the product you selected. You
       must click **Back** and choose another profile to augment.
  7. If you selected **Typical** profile creation, skip to the Administrative Security step.
  8. Advanced: On the Optional Application Deployment page, select whether to deploy the
     administrative console for managing the server (recommended). Click **Next**.
  9. Advanced: On the Profile Name and Location page, perform the following steps:
     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that
        you create must have a name. When you have more than one profile, you can tell them apart at
        their highest level by this name.
     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to
        the profile directory. The directory you specify will contain the files that define the runtime
        environment, such as commands, configuration files, and log files. The default directory is
        install_root\`profiles`*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    * In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
    * In the **Server name** field, enter a name for the server or accept the default value.
    * In the **Host name** field, enter a name for the host or accept the default value.
    * In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user.

    Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    * To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    * To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        – In the **Path** field, enter the directory path to the existing certificate.
        – In the **Password** field, enter the password for the certificate
        – In the **Keystore type** field, select the keystore type for the certificate you are importing.
        – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root\properties\portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services

    Profiles created to run as a Windows service fail to start when using IPv6 if the service is

configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

16. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      – Select **Production** if the server is to be used in a production capacity.
      – Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      – Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:

   • dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   • dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

   • PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   • PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   • PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   • PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   • PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   • PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.

- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista**   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the pmt.bat file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a com.ibm.wsspi.profile.WSProfileException or Access is denied message occurs in the

install_root\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin\ProfileManagement\pmt.bat**
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
6. If you selected **Typical** profile creation, skip to the Federation step.
7. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.

- In the **Cell name** field, enter a name for the cell or accept the default value.

Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
   - PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
   - PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
   - PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
   - PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

   Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista** Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.
- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.

2. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin****ProfileManagement****pmt.bat**

3. Shut down any servers associated with a profile you plan to augment.

4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

8. If you selected **Typical** profile creation, skip to the Federation step.

9. Advanced: On the Profile Name and Location page, perform the following steps:
   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.
   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.
   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

- In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
- In the **Server name** field, enter a name for the server or accept the default value.
- In the **Host name** field, enter a name for the host or accept the default value.
- In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
   - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
   - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
     - In the **Path** field, enter the directory path to the existing certificate.
     - In the **Password** field, enter the password for the certificate
     - In the **Keystore type** field, select the keystore type for the certificate you are importing.
     - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
     - Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    profile_root\properties\portdef.prop

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the `manageprofiles` command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the `manageprofiles` command-line utility.

Restriction: To run the `manageprofiles` command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the `runas` command. Remember to put double quotation marks around the `manageprofiles` command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available for custom profiles:
   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the `manageprofiles` command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- `PSStd_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- `PSAdv_StandAlone_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:
- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

    ```
    profile_root\bin\startManager.bat
    ```
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.

- You do not plan to use this custom node as a migration target.
1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

   profile_root\bin

2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

   addNode.bat *deployment_manager_host deployment_manager_SOAP_port*

   Run the following command from the command line if security is enabled:

   addNode.bat *deployment_manager_host deployment_manager_SOAP_port* -username
   userID_for_authentication -password *password_for_authentication*

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

   ADMU0003I: Node DMNDID2Node03 has been successfully federated.

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

➔ Add managed nodes (WebSphere Application Server)

Configuring a network deployment environment with an SQL Server database server:

You can configure a network deployment environment for IBM Business Process Manager using a Microsoft SQL Server database server.

Creating or augmenting deployment manager profiles:

To start the network deployment configuration, create or augment a deployment manager. You can create profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Creating Process Center deployment manager profiles with an SQL Server database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Center using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

install_root\java\bin\java -Duser.language=*locale install_root*\bin\ProfileManagement\startup.jar

For example, to start the Profile Management Tool in the German language, enter the following command:

install_root\java\bin\java -Duser.language=de *install_root*\bin\ProfileManagement\startup.jar

Restrictions: Vista   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user

or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin\ProfileManagement\pmt.bat**

2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.

4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.

5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.

6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.

7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      – In the **Path** field, enter the directory path to the existing certificate.
      – In the **Password** field, enter the password for the certificate
      – In the **Keystore type** field, select the keystore type for the certificate you are importing.
      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.

- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:
- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root/properties/portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the

service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

15. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating Process Server deployment manager profiles with an SQL Server database server using the Profile Management Tool:

You can configure a deployment manager profile for Process Server using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista**   Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root*\bin\ProfileManagement\pmt.bat
2. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
3. On the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
5. On the Profile Creation Options page, choose to perform a **Typical** or an **Advanced** profile creation, and click **Next**. If you selected **Typical** profile creation, skip to the Administrative Security step.
6. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
7. Advanced: On the Profile Name and Location page, perform the following steps:

   a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

   b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

      When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

   d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

   e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.
8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.
9. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.
10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

- To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
- To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
  - In the **Path** field, enter the directory path to the existing certificate.
  - In the **Password** field, enter the password for the certificate
  - In the **Keystore type** field, select the keystore type for the certificate you are importing.
  - In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
  - Click **Next** to display the Security Certificate (Part 2) page

  When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.
11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.
12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

    Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

    During profile deletion, you can remove the Windows service that is added during profile creation.

    IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
    Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

14. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.
      - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
- **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
- **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
- **Password**: Enter the password for the Process Center user.

You can click **Test Connection** to check the connection to the Process Center.

If you selected **Typical** profile creation, skip to the Profile Summary step.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create new profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:
   - `dmgr.procctr`: for a Process Center deployment manager profile for IBM BPM Standard.
   - `dmgr.procsvr`: for a Process Server deployment manager profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- **PSStd_StandAlone_DB2_DATASERVER.response**: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- **PSAdv_StandAlone_DB2_DATASERVER.response**: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- **PCStd_StandAlone_MSSQLSERVER.response**: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- **PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response**: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- **PSAdv_Dmgr_DB2_DATASERVER.response**: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- **PCAdv_Dmgr_ORACLE.response**: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- **PSAdv_Custom_DB2_DATASERVER.response**: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- **PCAdv_Custom_ORACLE.response**: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

   ```
   manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/dmgr.procctr
   ```

   If you have created a response file, specify the **-response** parameter without any other parameters. For example:

   ```
   manageprofiles.bat -response myResponseFile
   ```

   The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Center with an SQL Server database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: ‎ Vista ‎ Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user

or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
   - Start the tool from the First steps console.
   - Run the command *install_root***bin****ProfileManagement****pmt.bat**
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
   - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
   - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
   - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:

a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is `install_root\profiles\profile_name`.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

   When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

    - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

    - In the **Server name** field, enter a name for the server or accept the default value.

    - In the **Host name** field, enter a name for the host or accept the default value.

    - In the **Cell name** field, enter a name for the cell or accept the default value.

    Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

    Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

      – In the **Path** field, enter the directory path to the existing certificate.

      – In the **Password** field, enter the password for the certificate

      – In the **Keystore type** field, select the keystore type for the certificate you are importing.

      – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

      – Click **Next** to display the Security Certificate (Part 2) page

    When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:

    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

    Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

    If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

    `profile_root\properties\portdef.prop`

    Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

    If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services

Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

16. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

17. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles for Process Server with an SQL Server database server using the Profile Management Tool:

You can use the Profile Management Tool to augment an existing WebSphere Application Server V8.0 deployment manager profile.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista** **Windows 7**

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the `install_root\bin\ProfileManagement\pmt.bat` file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Specify a database design file to be used for the database configuration.
- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. Use one of the following methods to start the Profile Management Tool.
    - Start the tool from the First steps console.
    - Run the command *install_root***bin\ProfileManagement\pmt.bat**
2. Shut down any servers associated with a profile you plan to augment.
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.
5. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.
6. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

   The **Typical** option augments a profile with default configuration settings.

   The **Advanced** option lets you specify your own configuration values for a profile.

   Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:
    - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
    - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
    - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.
7. If you selected **Typical** profile creation, skip to the Administrative Security step.
8. Advanced: On the Optional Application Deployment page, select whether to deploy the administrative console for managing the server (recommended). Click **Next**.
9. Advanced: On the Profile Name and Location page, perform the following steps:
    a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the bin directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   - In the **Server name** field, enter a name for the server or accept the default value.

   - In the **Host name** field, enter a name for the host or accept the default value.

   - In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

11. Required: On the Administrative Security page, enter values for the **User name**, **Password**, and **Confirm password**. The password specified during install for administrator will be used for all internal users including tw_admin and tw_user. Because all IBM Business Process Manager profiles must have administrative security enabled, the **Next** button is enabled only after you enter the values.

   Click **Next**. If you selected **Typical** profile creation, skip to the Process Server Configuration step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

   - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.

   - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:

     – In the **Path** field, enter the directory path to the existing certificate.

     – In the **Password** field, enter the password for the certificate

     – In the **Keystore type** field, select the keystore type for the certificate you are importing.

     – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.

     – Click **Next** to display the Security Certificate (Part 2) page

   When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the trust.p12 file.

13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by

default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

When you create either or both certificates, or import either or both certificates, the keystore files that are created are:

- `key.p12`: Contains the default personal certificate.
- `trust.p12`: Contains the signer certificate from the default root certificate.
- `root-key.p12`: Contains the root signing certificate.
- `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
- `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
- `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

Ports are recognized as being in use if the following conditions are satisfied:

- The ports are assigned to a profile created under an installation performed by the current user.
- The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

profile_root\properties\portdef.prop

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. Advanced: If you do not have administrative privileges, skip to the next step. If you have administrative privileges, on the Service Definition, page indicate whether to use a Windows service to run IBM Business Process Manager.

If the profile is configured as a Windows service, IBM Business Process Manager starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server as a Windows service and issue the **startServer** command, the **wasservice** command starts the defined services.

Important: If you choose to log on as a specified user account, you must specify the user ID and the password for the user who is to run the service, and the startup type (default is `Manual`). The user ID

must not have spaces in its name, must belong to the Administrator group, and must have the advanced user right "Log on as a service." If the user ID belongs to the Administrator group, the Profile Management Tool grants it the advanced user right if it does not already have it.

During profile deletion, you can remove the Windows service that is added during profile creation.

IPv6 (Internet Protocol version 6) considerations when running profiles as Windows services
Profiles created to run as a Windows service fail to start when using IPv6 if the service is configured to run as Local System. Create a user-specific environment variable to enable IPv6. Because this environment variable is a user variable instead of a Local System variable, only a Windows service that runs as that specific user can access this environment variable. By default, when a new profile is created and configured to run as a Windows service, the service is set to run as Local System. When the IBM Business Process Manager Windows service tries to run, the service is unable to access the user environment variable that specifies IPv6, and thus tries to start as IPv4. The server does not start correctly in this case. To resolve the problem, when creating the profile, specify that the IBM Business Process Manager Windows service runs as the same user ID under which the environment variable that specifies IPv6 is defined, instead of as Local System.

16. On the Process Server Configuration page, set the values for the following parameters.
    - **Environment name**: The environment name is used to connect from a Process Center to this Process Server.
    - Environment **Type**: Select how the Process Server is used:
      - Select **Production** if the server is to be used in a production capacity.
      - Select **Stage** if the server is to be used as a temporary location to host changes before putting them into production.
      - Select **Test** if the server is to be used as a testing environment, for example, for load testing.

    Restriction: Do not mix production and non-production servers in the same cell.
    Select **Use this server offline** if you did not select **Production** as the environment type or if this Process Server will not be connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications, but the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

    If you did not select **Use this server offline**, provide the following information for the Process Center that this server is to connect to:
    - **Protocol**: Select either **http://** or **https://** as the connection protocol to the Process Center.
    - **Host name**: Enter the host or virtual host that this Process Server will use to communicate with Process Center. Use a fully qualified host name. In an environment with a load balancer or proxy server between the Process Server and the Process Center services, make sure that what you designate here matches the URL for accessing the Process Center.
    - **Port**: Enter the port number of the Process Center. In an environment with a load balancer or proxy server between the Process Server and the Process Center, make sure that what you designate here matches the URL for accessing the Process Center.
    - **User name**: Enter the name of a Process Center user. Process Server will connect to Process Center as this user.
    - **Password**: Enter the password for the Process Center user.

    You can click **Test Connection** to check the connection to the Process Center.

    If you selected **Typical** profile creation, skip to the Profile Summary step.

17. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.
18. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Augmenting deployment manager profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 custom profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a deployment manager profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.
2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available:
   - dmgr.procctr: for a Process Center deployment manager profile for IBM BPM Standard.
   - dmgr.procsvr: for a Process Server deployment manager profile for IBM BPM Standard.
3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

   Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.
4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.

- `PCStd_StandAlone_MSSQLSERVER.response`: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- `PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/dmgr.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

- Add custom (managed nodes) profiles to be managed by the deployment manager and then configure the deployment environment.

Creating or augmenting custom profiles:

As part of the network deployment configuration, you must create or augment at least one custom profile. A custom profile contains an empty node that you must federate into a deployment manager cell to make operational. Federating the custom profile changes it into a managed node.

Creating custom profiles using the Profile Management Tool:

You can create and federate custom profiles using the Profile Management Tool.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: **Vista** **Windows 7**

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user

or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the *install_root*\bin\ProfileManagement directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the *install_root*\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the `Program Files` directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.
2. Use one of the following methods to start the Profile Management Tool.
    - Start the tool from the First steps console.
    - Run the command *install_root***bin****ProfileManagement****pmt.bat**
3. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.
4. On the **Profiles** tab, click **Create**.

    The Environment Selection page opens in a separate window.
5. On the Environment Selection page, locate the IBM Business Process Manager Standard configuration and expand the section. Select the profile to create and click **Next**.
6. If you selected **Typical** profile creation, skip to the Federation step.
7. Advanced: On the Profile Name and Location page, perform the following steps:
    a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.
    b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.
    c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

        When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.
    d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

8. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:
   - In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.
   - In the **Server name** field, enter a name for the server or accept the default value.
   - In the **Host name** field, enter a name for the host or accept the default value.
   - In the **Cell name** field, enter a name for the cell or accept the default value.
   Click **Next**.

9. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   - You plan to use this custom node as a migration target.
   - Another profile is being federated. (Node federation must be serialized.)
   - The deployment manager is not running or you are not sure if it is running.
   - The deployment manager has the SOAP connector disabled
   - The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   - The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   - The deployment manager does not have a JMX administrative port enabled.
   - The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   - The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   - If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

10. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
      - In the **Path** field, enter the directory path to the existing certificate.
      - In the **Password** field, enter the password for the certificate

- In the **Keystore type** field, select the keystore type for the certificate you are importing.
- In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
- Click **Next** to display the Security Certificate (Part 2) page

When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.

11. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

   If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

   When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
   - `key.p12`: Contains the default personal certificate.
   - `trust.p12`: Contains the signer certificate from the default root certificate.
   - `root-key.p12`: Contains the root signing certificate.
   - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
   - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
   - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

   These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.

12. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

   Ports are recognized as being in use if the following conditions are satisfied:
   - The ports are assigned to a profile created under an installation performed by the current user.
   - The ports are currently in use.

   Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

   If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

   `profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

13. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

14. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Creating custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create custom profiles.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

```
runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"
```

Non-administrative users are prompted for the administrator password.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your profile (using the **-templatePath** option).

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available for custom profiles:
   - managed.procctr: for a Process Center custom profile for IBM BPM Standard.
   - managed.procsvr: for a Process Server custom profile for IBM BPM Standard.

2. Determine which parameters are required for your profile by reviewing the example profile creation commands. Determine the values that you want to supply for the profile by reviewing the default values in the **manageprofiles** parameters topic.

3. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

   Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

   The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:
   - PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
   - PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
   - PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
   - PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.

- `PSAdv_Dmgr_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- `PCAdv_Dmgr_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- `PSAdv_Custom_DB2_DATASERVER.response`: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- `PCAdv_Custom_ORACLE.response`: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

4. Run the file from the command line. For example:

```
manageprofiles.bat -create -templatePath install_root/profileTemplates/BPM/managed.procctr
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the Profile Management Tool:

If you have existing WebSphere Application Server V8.0 custom profiles, you can augment an existing profile using the Profile Management Tool to add support for IBM Business Process Manager.

Remember to shut down any servers associated with a profile you plan to augment.

The language of the Profile Management Tool is determined by the default language on the system. If the default language is not one of the supported languages, English is used. You can override the default language by starting the Profile Management Tool from the command line and using the **java user.language** setting to replace the default language. Enter the following command:

```
install_root\java\bin\java -Duser.language=locale install_root\bin\ProfileManagement\startup.jar
```

For example, to start the Profile Management Tool in the German language, enter the following command:

```
install_root\java\bin\java -Duser.language=de install_root\bin\ProfileManagement\startup.jar
```

Restrictions: ▉ **Vista** ▉ Windows 7

- To run the Profile Management Tool on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges. Whether you are an administrative user or a non-administrative user, right-click the `pmt.bat` file and select **Run as administrator**. Alternatively, use the **runas** command at the command line. For example, the following command can be run from the `install_root\bin\ProfileManagement` directory:

```
runas /user:MyAdminName /env pmt.bat
```

Non-administrative users are prompted for the administrator password.

- If you install multiple instances of IBM Business Process Manager as the root user and give a nonadministrative user access to only a subset of those instances, the Profile Management Tool does not function correctly for the nonadministrative user. In addition, a `com.ibm.wsspi.profile.WSProfileException` or `Access is denied` message occurs in the

install_root\bin\ProfileManagement\pmt.bat file. By default, nonadministrative users do not have access to the Program Files directory, which is the default installation location for the product. To resolve this issue, nonadministrative users must either install the product by themselves or be given permission to access the other product instances.

After you start the Profile Management Tool, you must decide whether to choose **Typical** or **Advanced** profile creation. Use the advanced option to:

- Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable).
- Create a system service to run the server, if your operating system and the privileges of your user account permit the creation of services.

  1. If you want to federate the custom node to a deployment manager while creating the custom profile, start the deployment manager.

  2. Use one of the following methods to start the Profile Management Tool.

     - Start the tool from the First steps console.
     - Run the command *install_root***bin\ProfileManagement\pmt.bat**

  3. Shut down any servers associated with a profile you plan to augment.

  4. On the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

  5. On the **Profiles** tab, select the profile that you want to augment and click **Augment**. If you augment a WebSphere Application Server profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button cannot be selected unless a profile can be augmented. The Augment Selection page opens in a separate window.

  6. On the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

  7. On the Profile Augmentation Options page, choose to perform a **Typical** or an **Advanced** profile augmentation, and click **Next**.

     The **Typical** option augments a profile with default configuration settings.

     The **Advanced** option lets you specify your own configuration values for a profile.

     Restriction: The Profile Management Tool displays a warning message if any of the following conditions occur:

     - The profile you selected to augment has a running server. You cannot augment the profile until you stop the server or click **Back** and choose another profile that does not have running servers.
     - The profile you selected to augment is federated. You cannot augment a federated profile. You must click **Back** and choose another profile that is not federated.
     - The profile you selected to augment is already augmented with the product you selected. You must click **Back** and choose another profile to augment.

  8. If you selected **Typical** profile creation, skip to the Federation step.

  9. Advanced: On the Profile Name and Location page, perform the following steps:

     a. In the **Profile name** field, specify a unique name or accept the default value. Each profile that you create must have a name. When you have more than one profile, you can tell them apart at their highest level by this name.

     b. In the **Profile directory** field, enter the directory for the profile or use the **Browse** button to go to the profile directory. The directory you specify will contain the files that define the runtime environment, such as commands, configuration files, and log files. The default directory is *install_root*\profiles*profile_name*.

     c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile. This check box is shown only if you have an existing profile on your system.

When a profile is the default profile, commands work automatically with it. The first profile that you create on a workstation is the default profile. The default profile is the default target for commands that are issued from the `bin` directory in the product installation root. When only one profile exists on a workstation, every command operates on that profile. If more than one profile exists, certain commands require that you specify the profile to which the command applies.

d. From the **Server runtime performance tuning setting** list, select a performance tuning level appropriate for the profile you are creating. This parameter is a WebSphere Application Server parameter.

e. Click **Next**. If you click **Back** and change the name of the profile, you might have to manually change the name on this page when it is displayed again.

10. Advanced: On the Node, Host and Cell Names page, perform the following actions for the profile you are creating:

   • In the **Node name** field, enter a name for the node or accept the default value. Try to keep the node name as short as possible, but ensure that node names are unique within your deployment environment.

   • In the **Server name** field, enter a name for the server or accept the default value.

   • In the **Host name** field, enter a name for the host or accept the default value.

   • In the **Cell name** field, enter a name for the cell or accept the default value.

   Click **Next**.

11. On the Federation page, choose to federate the node into the deployment manager now as part of the profile creation, or at a later time and apart from profile creation If you choose to federate the node as part of the profile creation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Select **Federate this node later** if any one of the following situations is true:
   • You plan to use this custom node as a migration target.
   • Another profile is being federated. (Node federation must be serialized.)
   • The deployment manager is not running or you are not sure if it is running.
   • The deployment manager has the SOAP connector disabled
   • The deployment manager has not yet been augmented into a IBM Business Process Manager deployment manager.
   • The deployment manager is not at a release level the same or higher than the release level of the profile you are creating.
   • The deployment manager does not have a JMX administrative port enabled.
   • The deployment manager is re-configured to use the non-default remote method invocation (RMI) as the preferred Java Management Extensions (JMX) connector. (Select **System administration** > **Deployment manager** > **Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

   Processing associated with federating the node as part of custom profile creation:
   • The Profile Management Tool verifies that the deployment manager exists and can be contacted, and that the authentication user ID and password are valid for that deployment manager (if it is secured).
   • If you attempt to federate a custom node when the deployment manager is not running or is not available for other reasons, a warning box prevents you from continuing. If this warning box appears, click **OK** and then make different selections on the Federation page.

   Click **Next**. If you selected **Typical** profile creation, skip to the Profile Summary step.

12. Advanced: On the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.
    - To create a new default personal certificate and a new root signing certificate, select **Create a new default personal certificate** and **Create a new root signing certificate**, and click **Next**.
    - To import existing certificates, select **Import an existing default personal certificate** and **Import an existing root signing personal certificate** and provide the following information:
        – In the **Path** field, enter the directory path to the existing certificate.
        – In the **Password** field, enter the password for the certificate
        – In the **Keystore type** field, select the keystore type for the certificate you are importing.
        – In the **Keystore alias** field, select the keystore alias for the certificate you are importing.
        – Click **Next** to display the Security Certificate (Part 2) page

      When you import a personal certificate as the default personal certificate, import the root certificate that signed the personal certificate. Otherwise, the Profile Management Tool adds the signer of the personal certificate to the `trust.p12` file.
13. Advanced: On the Security Certificate (Part 2) page, verify that the certificate information is correct, and click **Next** to display the Port Values Assignment page.

    If you create the certificates, you can use the default values or modify them to create new certificates. The default personal certificate is valid for one year by default and is signed by the root signing certificate. The root signing certificate is a self-signed certificate that is valid for 15 years by default. The default keystore password for the root signing certificate is `WebAS`. Change the password. The password cannot contain any double-byte character set (DBCS) characters because certain keystore types, including PKCS12, do not support these characters. The keystore types that are supported depend on the providers in the `java.security` file.

    When you create either or both certificates, or import either or both certificates, the keystore files that are created are:
    - `key.p12`: Contains the default personal certificate.
    - `trust.p12`: Contains the signer certificate from the default root certificate.
    - `root-key.p12`: Contains the root signing certificate.
    - `default-signers.p12`: Contains signer certificates that are added to any new keystore file that you create after the server is installed and running. By default, the default root certificate signer and a DataPower signer certificate are in this keystore file.
    - `deleted.p12`: Holds certificates deleted with the deleteKeyStore task so that they can be recovered if needed.
    - `ltpa.jceks`: Contains server default Lightweight Third-Party Authentication (LTPA) keys that the servers in your environment use to communicate with each other.

    These files all have the same password when you create or import the certificates, which is either the default password, or a password that you specify. An imported certificate is added to the `key.p12` file or the `root-key.p12` file. If you import any certificates and the certificates do not contain the information that you want, click **Back** to import another certificate.
14. Advanced: On the Port Values Assignment page, verify that the ports specified for the profile are unique and click **Next**. The Profile Management Tool detects ports currently used by other WebSphere products and displays recommended port values that do not conflict with existing ones. If you have applications other than WebSphere ones that use specified ports, verify that the ports do not conflict. If you chose not to deploy the administrative console on the Optional Application Deployment page, the administrative console ports are not available on the Port Values Assignment page.

    Ports are recognized as being in use if the following conditions are satisfied:
    - The ports are assigned to a profile created under an installation performed by the current user.
    - The ports are currently in use.

Although the tool validates ports when you access the Port Values Assignment page, port conflicts can still occur resulting from selections you make on subsequent Profile Management Tool pages. Ports are not assigned until profile creation completes.

If you suspect a port conflict, you can investigate it after the profile is created. Determine the ports used during profile creation by examining the following file:

`profile_root\properties\portdef.prop`

Included in this file are the keys and values used in setting the ports. If you discover port conflicts, you can reassign ports manually. To reassign ports, see "Updating ports in existing profiles" in the WebSphere Application Server information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

15. On the Profile Summary page, review the information. Click **Create** to create the profile or **Back** to change the characteristics of the profile.

16. On the Profile Complete page, review the information. To proceed to the First Steps Console, make sure that **Launch First Steps Console** is selected and click **Finish**.

After you have finished adding custom profiles, configure the deployment environment.

Augmenting custom profiles using the manageprofiles command-line utility:

Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to augment existing WebSphere Application Server V8.0 profiles.

Remember to shut down any servers associated with a profile you plan to augment.

Make sure that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed when you run the command, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

If the profile that you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

Restriction: To run the **manageprofiles** command on Windows 7, Windows Vista, or Windows Server 2008, you must elevate your Microsoft Windows user account privileges using the **runas** command. Remember to put double quotation marks around the **manageprofiles** command and all parameters. For example, the following command can be run from the *install_root*\bin directory:

`runas /env /user:MyAdminName "manageprofiles.bat -response myResponseFile"`

Non-administrative users are prompted for the administrator password.

1. Determine the template that was used to create the existing profile that you want to augment. You must augment a custom profile. You can determine the template by viewing the profile registry in the *install_root*\properties\profileRegistry.xml file. Do not modify this file; use it only to view the templates.

2. Find the appropriate template to use for the augmentation.

   Templates for each profile are located in the *install_root*\profileTemplates\BPM directory for BPM templates. The following templates are available for custom profiles:

   - `managed.procctr`: for a Process Center custom profile for IBM BPM Standard.
   - `managed.procsvr`: for a Process Server custom profile for IBM BPM Standard.

3. Use the augment parameter to make changes to an existing profile with an augmentation template. The augment parameter causes the **manageprofiles** command-line utility to update or augment the profile identified in the **-profileName** parameter using the template in the **-templatePath** parameter. The augmentation templates that you can use are determined by which IBM products and versions

are installed in your environment. Make sure that you specify the fully qualified file path for **-templatePath**, because a relative file path for the **-templatePath** parameter results in the specified profile not being fully augmented.

Note: Do not manually modify the files that are located in the *install_dir*/profileTemplates/BPM directory.

4. To use the **-responseFile** parameter, look at the provided sample response files and create a response file that is specific to your environment.

Important: Ensure that you do not leave blank spaces after the values; for example **'personalCertValidityPeriod=1 '** or **'winserviceCheck=false '**. Spaces will cause profile creation to fail.

The samples are located in the *install_root*\BPM\samples\manageprofiles directory. Choose an appropriate response file based on the type of profile (stand-alone or network, Process Center or Process Server). The following sample files are available:

- PSStd_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PSAdv_StandAlone_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a stand-alone configuration with a DB2 database.
- PCStd_StandAlone_MSSQLSERVER.response: Example of configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with an SQL Server database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT.response: Example of configuring IBM Business Process Manager Advanced Process Center in a stand-alone configuration with an SQL Server database.
- PSAdv_Dmgr_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a deployment manager configuration with a DB2 Dataserver database.
- PCAdv_Dmgr_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a deployment manager configuration with an Oracle database.
- PSAdv_Custom_DB2_DATASERVER.response: Example of configuring IBM Business Process Manager Advanced Process Server in a custom configuration with a DB2 Dataserver database.
- PCAdv_Custom_ORACLE.response: Example of configuring IBM Business Process Manager Advanced Process Center in a custom configuration with an Oracle database.

Copy one of the sample response files to your working directory. Edit the parameters in the response file as appropriate to your configuration and save the edited response file. Make sure that the **templatePath** property path matches your specific installation directory.

5. Run the file from the command line. Do not supply a **-profilePath** parameter. For example:

```
manageprofiles.bat -augment -templatePath install_root/profileTemplates/BPM/managed.procctr
-profileName MyProfileName
```

If you have created a response file, specify the **-response** parameter without any other parameters. For example:

```
manageprofiles.bat -response myResponseFile
```

The status is written to the console window when the command is finished running. Normal syntax checking on the response file applies as the file is parsed like any other response file. Individual values in the response file are treated as command-line parameters.

After you have finished adding custom profiles, configure the deployment environment.

Federating custom nodes to the deployment manager:

After creating a custom node, you can use the **addNode** command to federate the custom node into a deployment manager cell. You can manage all federated nodes from the deployment manager.

Before using this procedure, ensure that the following prerequisites are met:

- You have installed IBM Business Process Manager and created a deployment manager and a custom profile. This procedure assumes you did *not* federate the custom profile during its creation or augmentation, either with the Profile Management Tool or with the **manageprofiles** command-line utility.
- The deployment manager is running. If it is not, start it either by selecting **Start the deployment manager** from its First steps console or by entering the following command, where *profile_root* represents the installation location of the deployment manager profile:

  profile_root\bin\startManager.bat
- The deployment manager has been created or augmented to be an IBM Business Process Manager deployment manager.
- The deployment manager is at the same release level or higher than the custom profile you created or augmented.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP.
- You do not plan to use this custom node as a migration target.
1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to the following directory (from a command line), where *profile_root* represents the installation location of the custom profile):

   profile_root\bin
2. Run the **addNode** command.

   Run the following command from the command line if security is not enabled:

   addNode.bat *deployment_manager_host deployment_manager_SOAP_port*

   Run the following command from the command line if security is enabled:

   addNode.bat *deployment_manager_host deployment_manager_SOAP_port* -username
   userID_for_authentication -password *password_for_authentication*

   An output window opens. If you see a message similar to the following message, your custom profile was federated successfully:

   ADMU0003I: Node DMNDID2Node03 has been successfully federated.

The custom profile is federated into the deployment manager.

After federating the custom profile, go to the administrative console of the deployment manager to customize the empty node or to create a new server.

Related information:

⏏ Add managed nodes (WebSphere Application Server)

Loading the database with system information in a network deployment environment:

If you are creating a network deployment environment, you must run the **bootstrapProcessServerData** command before you try to start or use Process Server or Process Center.

This command retrieves the database information from the `98database.xml` file to make a connection to the Process Server database. If you made a mistake in entering the database information during profile creation, you must manually edit this file, which is located in the *Profile_name*/config directory, to make the corrections.

Database passwords must be encrypted.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the Process Server database. This data is required for the BPM applications to run correctly

- In a network deployment (ND) environment, you must run this command after a server or cluster of servers is created. **For a cluster, you need to run the command only once**, specifying a single cluster member. Run this command after the database and its tables have been created, after the profile and deployment environment have been created, and before the first server is started. You do not need to rerun the command if you add another cluster member.

Run the bootstrap utility from the command line. The bootstrap utility is found in the deployment manager profile directory. For example:

> **Linux** **UNIX** *install_root*/profiles/Dmgr01/bin

> **Windows** *install_root*\profiles\Dmgr01\bin

Run the bootstrap utility using one of the following commands:

- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath*] **-clusterName** *cluster_name*
- **bootstrapProcessServerData.sh [-dbJDBCClasspath** *classpath*] **-nodeName** *node_name* **-serverName** *server_name*

where:

- **-dbJDBCClasspath** is the location of the database JDBC driver. The value specified for the **dbJBBCClasspath** must be surrounded by quotation marks if there are spaces in the path. The default location is *WAS_INSTALL_ROOT*/jdbcdrivers.
- **-clusterName** is the name of the application target cluster. You must specify either this parameter or the **-nodeName** and **-serverName** parameters.
- **-nodeName** is the name of the node. You must specify either this parameter and the **-serverName** parameter, or the **-clusterName** parameter.
- **-serverName** is the name of the server. You must specify either this parameter and the **-nodeName** parameter, or the **-clusterName** parameter.

The parameters are case-sensitive.

Important: For SQL Server only: Ensure that the databases you create for Process Server and Performance Data Warehouse are case insensitive. The letters **CI** in the **COLLATE** attribute value specifies this. Ensure this variable looks like this: **SQL_Latin1_General_CP1_CI_AS** (not **SQL_Latin1_General_CP1_CS_AS**). Failure to do so can result in an error like the following:

```
org.springframework.beans.factory.BeanCreationException: Error creating bean with name
'message.routingCache'
defined in class path resource [registry.xml]: Instantiation of bean failed; nested exception is
org.springframework.beans.BeanInstantiationException: Could not instantiate bean class
[com.lombardisoftware.bpd.runtime.engine.message.DefaultMessageRoutingCache]: Constructor threw exception;
nested exception is org.springframework.jdbc.BadSqlGrammarException: PreparedStatementCallback;
bad SQL grammar [select "value" from lsw_system where "key"=?]; nested exception is
com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.

Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: Invalid object name 'lsw_system'.
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDatabaseError(SQLServerException.java:196)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.getNextResult(SQLServerStatement.java:1454)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.doExecutePreparedStatement
(SQLServerPreparedStatement.java:388)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute
(SQLServerPreparedStatement.java:338)
at com.microsoft.sqlserver.jdbc.TDSCommand.execute(IOBuffer.java:4026)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.executeCommand(SQLServerConnection.java:1416)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeCommand(SQLServerStatement.java:185)
at com.microsoft.sqlserver.jdbc.SQLServerStatement.executeStatement(SQLServerStatement.java:160)
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement.executeQuery
(SQLServerPreparedStatement.java:281)
at org.apache.commons.dbcp.DelegatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:205)
at org.springframework.jdbc.core.JdbcTemplate$1.doInPreparedStatement(JdbcTemplate.java:648)
at org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:591)
[...]
```

You have loaded the database with system information prior to successfully starting the IBM Business Process Manager server. The log information for the bootstrap operation is saved to the `USER_INSTALL_ROOT`/logs/ directory in a file called `bootstrapProcessServerData.`*clusterName.timestamp*`.log` or `bootstrapProcessServerData.`*nodeName.serverName.timestamp*`.log` depending on the target you specified. The console displays a subset of the logged information.

Bootstrap data onto a server that is part of an ND environment but not part of a cluster:

`bootstrapProcessServerData -nodeName node01 -serverName server1`

Bootstrap data onto a cluster that hosts the Process Server or Process Center:

`bootstrapProcessServerData -clusterName myAppCluster`

Modifying an existing installation:

After you install and configure the runtime environment on your system in IBM Business Process Manager, you might want to customize your configuration. For example, you might want to customize settings, set up an additional security provider, set up user accounts, and change and encrypt passwords.